HL7 Australia

Australian Diagnostics and Referral Messaging - Localisation of HL7 Version 2.4

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1 Introduction

Australian Diagnostics and Referral Messaging - Localisation of HL7 Version 2.4, Release 2 is the Australian localisation of the international *HL7 V2* Standard covering the Laboratory/Diagnostics/Clinical result reporting, laboratory/radiology ordering specification and patient referral. The term "Diagnostics" covers non laboratory reporting including reporting of diagnostic imaging and non referral related clinical reporting (for example: echocardiography, respiratory function, endoscopy, stress testing, sleep studies). The term pathology in Australia covers all aspects of laboratory medicine including clinical and anatomical pathology domains, while the term “radiology” is understood to include all diagnostic imaging modalities, whether X-ray based or other (e.g. ultrasound).

The relationship between pathology and radiology practices and their customers in Australia is considered by Government and others as similar to that between other consultant specialists and their customers. For that reason, what HL7 would call an order is generally called a request here and the response by the pathology provider (a formal term meaning the responsible specialist(s)) is called a report. For some disciplines such as microbiology, anatomical pathology, genetics and genomics the request is more by way of asking a clinical question expecting the pathology provider to understand the best way of answering it - e.g. Is this cancer, if so what type, and what is the prognosis? It is expected this form of requesting will become more common as laboratory medicine evolves. In radiology, it is generally necessary for the request to include clinical information relevant to the purpose of the request, to enable the optimal choice, and interpretation, of the examination. It is also frequently necessary that the request contain information relevant to safety issues that may arise from performance of the test, such as contrast allergies, renal disease, etc.

The use case here focuses on widely-available, well-standardized methods that will support the secure access to electronic laboratory and radiological requests and results and interpretations for clinical care by authorized parties and is driven by the need for timely electronic access to requested, referred and historical lab results. Requesting clinicians (the Placer) receive test results in the form of a HL7 V2 message, as a response to a request (electronic or paper) or as an unsolicited message by having the report directly sent by the pathology practice (the Filler) to the clinician for importation into their local systems. Images generated in the course of a radiological procedure are not sent in an HL7 message. Depending on the referrer’s requirements, and local technical capabilities, images may be made available on traditional analogue film (rapidly becoming obsolete), portable digital media, or, increasingly, in digital form via an online electronic portal.

Referral messaging covers clinical referral between clinicians and hospitals, as well as hospital discharge and includes a patient history summary suitable for constructing a Virtual Medical Record for use in decision support and can include any pathology/radiology/diagnostics reports relevant to the referral. It also includes a Medication summary.

This document tries to provide coverage for all laboratory and radiological messaging scenarios in the Australian context including public and private entities, hospital and community and public health entities. The referral messaging covers referral between medical practitioners, allied health and hospitals. It covers referral between practitioners, referral to hospitals and hospital discharge.

The Royal College of Pathologists of Australasia (RCPA) has developed a number of policies around safety in requesting and reporting of pathology including the use of terminology and the transmission of data. These

policies have been incorporated into this document. Similarly, the Royal Australian and New Zealand College of Radiologists has defined minimum requirements for the content of referrals and reports. Standardised terminology for radiological procedures is being developed, and will be progressively implemented throughout the sector.

This document and the specifications in it supersede those in *AS 4700.2-2012 - Implementation of Health Level Seven (HL7) Version 2.4 - Pathology and diagnostic imaging (diagnostics)* and *HB 262 (Rev)-2012 - Guidelines for messaging between diagnostic providers and health service providers, and AS 4700.6-2006 Implementation of Health Level Seven (HL7) Version 2.4 Part 6: Referral, discharge and health record messaging*.

1.1 Purpose

This guide contains the necessary specifications for pathology and radiology requests and reports in Australian healthcare using the HL7 V2.4 protocol. Where appropriate aspects of later versions of HL7 V2 have been incorporated into this localization. Where this is done it is flagged as a variation from v2.4.

1.2 Audience

This guide is designed for use by analysts and developers who require guidance on optional and ambiguous elements of an Australian constrained *HL7 Version 2.4*. Users of this guide must be familiar with the details of HL7 message construction and processing. This guide is not intended to be a tutorial on that subject.

1.3 Scope

This specification covers the exchange of laboratory results or clinical referral from an appropriate requesting provider or organisation to the testing/consulting source and the transmission of the result from the testing source or clinician to the recipient. One of the primary features of this implementation guide is its focus on key points of broad interoperability. These key points include the following:

- **Use of strong identifiers for key information objects** – These information objects include patients, orders, providers and organizations. A strong identifier is one that uniquely identifies the object in question in a global fashion. This means the identifier includes enough information to remain unique when taken out of the context within which the identifier was created. For patients, providers and organisations this is achieved through the use of the use of the Individual Healthcare Identifier (IHI), Healthcare Provider Identifier–Individual (HPI–I) and Healthcare Provider Identifier–Organisation (HPI–O). In places Medicare Provider numbers are used to provide for location specific provider identifiers. Healthcare Provider Identifier-Organisation (HPI-O) identifiers are not currently available for all organisations at the required level of granularity and alternative organisation identifiers are usually used.
- **Use of Vocabulary Standards** This guide calls for specific vocabulary standards for the exchange of laboratory information. Use of standard vocabularies is important for a number of reasons. Use of standard vocabularies allows broad distribution of healthcare information without the need for individual institutions to exchange master files for data such as test codes, result codes, etc. Each institution ideally uses the standard codes or maps its own local vocabularies to the standard code, allowing information to be shared broadly, rather than remaining isolated as a single island of information. Standard vocabularies, particularly coded laboratory results, enable more automated decision support for patient healthcare, as well as more automated public health surveillance of populations.
- **Use of consistent specifications** across Laboratory/Radiology/Clinical usage. The specification of segment usage and display rules is common to all message types allowing documents to be carried in multiple message types (ORU^R02 or REF^I12) and displayed/processed using common logic in receiving software. This permits the packaging of reports (laboratory/radiology/clinical)

for the purpose of referral messaging with no loss of atomic data, identifiers or terminology, preserving the potential for decision support and allows consistent result filing and display by the receiver.

1.4 Conventions

This guide adheres to the following conventions:

- The guide is constructed assuming the implementer has access to the 2.4 version of the HL7 Standard. Although some information from the standard is included in this implementation guide, much information from the standard has not been repeated here.
- Data types (see page 119) have been described separately from the fields that use the data types.
- No conformance information is provided for optional message elements. This includes length, usage, cardinality, value sets and descriptive information. Implementers' who want to use optional message elements should refer to the HL7 Standard to determine how these optional message elements will be used. Use of optional message elements should not change the interpretation of data sent using the standard elements.

The following table describes the various attributes used by this guide to document data type attribute tables, message structure attribute tables and segment attribute tables. Not all attributes apply to all attribute tables.

Table 1-1. Message Element Attributes

Attribute	Definition
Seq	Sequence of the elements as numbered in the HL7 message element. The Seq attribute applies to the data type attribute table and the segment attribute table.
Segment	Three-character code for the segment and the abstract syntax (*e.g.*, the square and curly braces). [XXX] Optional { XXX } Repeating XXX Required [{ XXX }] Optional and Repeating Note that for segment groups there is no segment code present, but the square and curly braces will still be present. The Segment attribute only applies to the Message attribute table.

Attribute	Definition
Length	Maximum length of the element. Lengths are provided only for primitive data types. The length attribute applies to data type attribute tables and segment attribute tables. Lengths should be considered recommendations, not absolutes. The receiver can truncate fields, components and sub-components that are longer than the recommended length. The receiver should continue to process a message even when a field, component, or sub-component length exceeds the maximum recommended length identified in this specification. Because the maximum length is that of a single occurrence, the repetition separator is not included in calculating the maximum length (See HL7 International V2.4 Section 2.7.5, “Repetition”). Each occurrence of a repeating field may contain the number of characters specified by the field’s maximum length. (See HL7 International V2.4 Section 2.7.2, “Maximum length.”)
DT	Data type used by this profile for HL7 element. The data type attribute applies to data type attribute tables and segment attribute tables.

Attribute	Definition
Usage	Usage of the message element for this profile. Indicates whether the message element (segment, segment group, field, component, or subcomponent) is required, optional, or conditional in the corresponding message element. Usage applies to the message attribute table, data type attribute table and the segment attribute table. See HL7 International standard section C.3.1 – Usage for documentation on how usage has been implemented in this guide. Legal usage values are: **R –** Required. HL7 Definition: A conforming sending application shall populate all “R” elements with a non-empty value. Conforming receiving application shall process (save/print/archive/etc.) or ignore the information conveyed by required elements. A conforming receiving application must not raise an error due to the presence of a required element, but may raise an error due to the absence of a required element. Any element designated as required in a standard HL7 message definition shall also be required in all HL7 message profiles of that standard message. **RE –** Required, but can be empty. HL7 Definition: The element may be missing from the message, but must be sent by the sending application if there is relevant data. A conforming sending application must be capable of providing all "RE" elements. If the conforming sending application knows the required values for the element, then it must send that element. If the conforming sending application does not know the required values, then that element will be omitted. Receiving applications will be expected to process (save/print/archive/etc.) or ignore data contained in the element, but must be able to successfully process the message if the element is omitted (no error message should be generated because the element is missing). **O –** Optional. HL7 Definition: This code indicates that the Usage for this element has not yet been defined. A usage of ‘Optional’ may not be used in ‘implementation’ profiles (no-optionality profiles). Conformance may not be tested on an Optional field. Narrower profiles may be defined based on this profile, and may assign any usage code to the element **C –** Conditional. HL7 Definition: This usage has an associated condition predicate (See HL7 International standard section 2.B.7.6, "Condition predicate"). **If the predicate is satisfied:** A conformant sending application must always send the element. A conformant receiving application must process or ignore data in the element. It may raise an error if the element is not present. **If the predicate is NOT satisfied:** A conformant sending application must NOT send the element. A conformant receiving application must NOT raise an error if the condition predicate is false and the element is not present, though it may raise an error if the element IS present.

Attribute	Definition
	CE – Conditional, but may be empty. HL7 Definition: This usage has an associated condition predicate (See HL7 International standard section 2.B.7.6, "Condition predicate"). **If the predicate is satisfied:** If the conforming sending application knows the required values for the element, then the application must send the element. If the conforming sending application does not know the values required for this element, then the element shall be omitted. The conforming sending application must be capable of knowing the element (when the predicate is true) for all 'CE' elements. If the element is present, the conformant receiving application shall process (display/print/archive/etc.) or ignore the values of that element. If the element is not present, the conformant receiving application shall not raise an error due to the presence or absence of the element. **If the predicate is not satisfied:** The conformant sending application shall not populate the element. The conformant receiving application may raise an application error if the element is present. **X –** Not used for this profile. HL7 Definition: For conformant sending applications, the element will not be sent. Conformant receiving applications may ignore the element if it is sent, or may raise an application error. **-** - The hyphen (-) Indicates the profile using the actor does not provide documentation of the structure containing the particular element or does not provide documentation of the particular element in the structure. For instance in a data type specification for CE, if a profile does not provide documentation of the CE data type, then each component of the data type would have a "-" for the usage for the actor associated with that profile.
Cardinality	Minimum and maximum number of times the element may appear. [0..0] Element never present. [0..1] Element may be omitted and can have, at most, one occurrence. [1..1] Element must have exactly one occurrence. [0..n] Element may be omitted or may repeat up to *n* times. [1..n] Element must appear at least once, and may repeat up to *n* times. [0..*] Element may be omitted or repeat an unlimited number of times. [1..*] Element must appear at least once, and may repeat unlimited number of times. [m..n] Element must appear at least *m*, and at most, *n* times. Cardinality applies only to message attribute tables and segment attribute tables. See Section C.3.2 for additional information on how cardinality is handled in this guide.
Value Set	The set of coded values to be used with the field. The value set attribute applies only to the data type attribute tables and the segment attribute tables. The value set may equate with an entire code system part of a code system, or codes drawn from multiple code systems. Note: Where a table constraint is indicated, or where HL7 Version 2.6 standards are pre-adopted, the constrained or specified HL7 table is included below the data type table.
Name	HL7 descriptor of the message element. Name applies to the message attribute table, data type attribute table and the segment attribute table.

Attribute	Definition
Description/ Comments	Context and usage for the element. Description/Comments applies to the message attribute table, data type attribute table and the segment attribute table.

The following table provides some recommendations for testing the various usage codes described in the previous table.

Table 1-2. Usage Conformance Testing Recommendations

Usage	Recommendation
R – Required	Required elements must be present in a message instance with the following caveats: A required segment, which is contained within a segment group, is required only when the segment group is present in the message. For instance if the segment group is RE, then when the segment group is present, the required segments in that group must be present. A required field in a segment is required only when the segment itself is present in the message. For instance if the segment is CE (conditional or empty) and the conditional predicate is satisfied, then the segment is present in the message and the required fields must be present in the segment. A required component of a data type is required only when the field the data type is associated with is present in the message. Testing of a required element generally involves generating both a fully populated message instance as well as a minimally populated message instance. It may be necessary to generate specific test cases to handle separate segment groups, segments, etc. depending on the usage associated with these higher level elements within a message.
RE – Required, but can be empty	Since conformant senders must be able to show they can send this data, the primary mechanism for testing the RE usage would involve requiring the sender to transmit a “fully” populated message instance from their application. In this case, the expectation is that the message will be generated by the application, not handcrafted. The message would contain all data the sending application can populate in the message. This generally means the sender would be populating in their application all data elements being tested, including those that are optional in the application.
O – Optional	Conformance testing for optional elements would not normally be performed. If a particular implementation decides to use an optional element, it should create an implementation specific profile which further constrains this profile, making the optional element either required, required but may be empty, condition or conditional but may be empty, and then test the element in question based upon the assigned usage in that profile.
C – Conditional	Testing conditional elements generally means a special test case must be developed based upon the specific conditional rule or conditional predicate documented for the element.

Usage	Recommendation
CE – Conditional, but may be empty	Testing conditional but may be empty elements generally means a special test case must be developed based upon the specific conditional rule or conditional predicate documented for the element.
X – Not used for this profile	Testing this usage code usually involves looking at both fully populated and minimally populated messages. Note that the sending application may collect the data element in question, but it should not communicate that data element in message instances.

1.5 Key Words

In this localisation we have attempted to use 'MUST' to mean that the definition is a mandatory requirement of the specification and 'SHOULD' to mean that there may exist circumstances where it is valid to not adopt the recommendation but the full implications must be understood and carefully weighed before choosing a different course. This is in line with usage with NPAAC and other usage in the Australian Pathology Sector. We have however drawn heavily on HL7 v2 Standards in writing the localisation. These have a wider use of terms meaning the same thing and so it should be the key words:

“MUST” or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.

“MUST NOT” or the phrase "SHALL NOT", mean that the definition is an absolute prohibition of the specification.

“SHOULD” or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

“SHOULD NOT” or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behaviour is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behaviour described with this label.

“MAY” or the adjective "OPTIONAL", mean that an item is truly optional. One software supplier may choose to include the item to enable certain capabilities while another software supplier may omit the same item. In either case, the communication partner cannot be expected to either provide it (sender) or process it (receiver) without clear and voluntary agreement between the partners.

Any further constraining of optional segments/fields/components must be agreed to by both parties and cannot be made pre-requisite to sending/receiving messages to achieve the basic interoperability described in this guide. Therefore, a sender shall not require a receiver to accept any segments/fields/components marked as optional to successfully send a message. Likewise, a receiver shall not require a sender to send any segment/fields/components marked as optional to successfully receive such a message.

1.6 Related Documents

- HL7 V2.4 - Health Level Seven Standard Version 2.4: Health Level Seven Inc., Ann Arbor 2000 – www.hl7.org[3]
- LOINC® - Logical Observation Identifier Names and Codes, Users Guide, Indianapolis: Regenstrief Institute - www.regenstrief.org/medinformatics/loinc/[4]

3 http://www.hl7.org/
4 http://www.regenstrief.org/medinformatics/loinc/

- METeOR - AIHW 2010b. Metadata Online Registry (METeOR), Canberra: AIHW. Viewed 7 August 2018 – http://meteor.aihw.gov.au/content/index.phtml/itemId/268110
- RFC 1521 - MIME (Multipurpose Internet Mail Extensions) Part One: Mechanisms for Specifying and Describing the Format of Internet Message Bodies – http://www.freesoft.org/CIE/RFC/1521/
- SNOMED CT® - Systematized Nomenclature of Medicine Clinical Terms, International Health Terminology Standards Development Organisation, Copenhagen, Denmark - http://www.snomed.org/
- NPAAC - Requirements for Information Communication (Third Edition, 2013) National Pathology Accreditation Advisory Council - http://www.health.gov.au/internet/main/publishing.nsf/Content/health-npaac-docs-InfoComm.htm
- APUTS - Australian Pathology Units and Terminology Standards and Guidelines v2.3, 2016. The Royal College of Pathologists Australasia - https://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads
- AS 4700.2-2012 - Implementation of Health Level Seven (HL7) Version 2.4 - Pathology and diagnostic imaging (diagnostics) - http://infostore.saiglobal.com/store/Details.aspx?ProductID=1602624
- HB 262 (Rev)-2012 - Guidelines for messaging between diagnostic providers and health service providers - http://infostore.saiglobal.com/store/Details.aspx?ProductID=1507388
- AS 4846:2014 Person and provider identification in healthcare - https://infostore.saiglobal.com/en-au/Standards/AS-4846-2014-1753860/

1.7 Overview of Pathology Messaging

HL7 V2 messaging is widely used in Australia, including the transmission of pathology results from laboratories to providers. This section provides a broad overview of the format and function of pathology messages before detailing specific elements in detail. Electronic ordering is less well developed currently, but is used in some arenas and provides significant potential advantages for the requester and filler of laboratory tests.

HL7 V2 was developed before the introduction of xml or json and the format is text based and unique to HL7 v2. It was originally designed to pass 7 bit channels, optimizes file size and in Australia by default uses the ASCII character set as described in the appendix on parsing HL7 v2. Implementers should read and understand Appendix 1 Parsing HL7v2 (Informative) (see page 373). The file format contains no field names and requires pre-existing knowledge of its structure to process. It is highly storage and bandwidth efficient however.

Most results between laboratories and providers are currently sent in unsolicited mode, where no electronic order was sent, but a paper request was used. An HL7v2 ORU^R01 message is used for this and an example appears below. It should be noted in Australia most paper requests are computer generated and so there is still the opportunity to close the loop between ordering and reporting.

Example Pathology Report Message

```
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY:3.1.2^L|ACME Pathology^7654^AUSNATA|||20160612150255+1000||ORU^R01|
BGC06121502965-8968|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||AL|AL|AUS
PID|||12345678^^^^MR~5432109876^^^AUSHIC^MC||ANTHONY^JENNIFER^KAY||19490709|F|||225 Wises
Road^^BUDERIM^QLD^4551||^^^^^^54455055||||||4157269354
PV1|1|O||||||0488077Y^SMITH^RAY^^^DR^^^AUSHICPR^L^^^PRN|0191324T^SPECIALIST^ANDREW^^^DR^^^AUSHICPR^L^^^PRN
ORC|RE||15-57243112-CBC-0^ACME Pathology^7654^AUSNATA||CM|||||||0488077Y^SMITH^RAY^^^DR^^^AUSHICPR^L^^^PRN
OBR|1||15-57243112-CBC-0^ACME Pathology^7654^AUSNATA|CBC^MASTER FULL BLOOD COUNT^7654|||20151221|||||||
201512211940||0488077Y^SMITH^RAY^^^DR^^^AUSHICPR^L^^^UPIN||From ACME"ACMEG4399292.oru" 17.03.2016||
DR=UMA2P,LN=15-57243112,RC=Y||201603171124||HM|F||^^^201512210000|
0488077Y^SMITH^RAY^^^DR^^^AUSHICPR^L^^^UPIN~0191324T^SPECIALIST^ANDREW^^^DR^^^AUSHICPR^L^^^UPIN||||
123457Z&Davidson&John&&MBBS&Dr.
OBX|1|ST|15430-2^^LN||FULL BLOOD EXAMINATION||||||F
OBX|2|NM|718-7^Haemoglobin^LN||121|g/L|115-160||||F|||201512212329
OBX|3|NM|789-8^Red Cell Count^LN||3.8|10*12/L|3.6-5.2||||F|||201512212329
OBX|4|NM|4544-3^Haematocrit^LN||0.38||0.33-0.46||||F|||201512212329
OBX|5|NM|787-2^Mean Cell Volume^LN||100|fL|80-98|+|||F|||201512212329
OBX|6|NM|785-6^Mean Cell Haemoglobin^LN||32|pg|27-35||||F|||201512212329
OBX|7|NM|777-3^Platelet Count^LN||393|10*9/L|150-450||||F|||201512212329
OBX|8|NM|6690-2^White Cell Count^LN||8.8|10*9/L|4.0-11.0||||F|||201512212329
OBX|9|NM|770-8^Neutrophils^LN||53|%|||||F|||201512212329
OBX|10|NM|751-8^Neutrophils^LN||4.7|10*9/L|2.0-7.5||||F
OBX|11|NM|736-9^Lymphocytes^LN||30|%|||||F|||201512212329
OBX|12|NM|731-0^Lymphocytes^LN||2.6|10*9/L|1.1-4.0||||F
OBX|13|NM|5905-5^Monocytes^LN||14|%|||||F|||201512212329
OBX|14|NM|742-7^Monocytes^LN||1.2|10*9/L|0.2-1.0|+|||F
OBX|15|NM|713-8^Eosinophils^LN||3|%|||||F|||201512212329
OBX|16|NM|711-2^Eosinophils^LN||0.26|10*9/L|0.04-0.40||||F
OBX|17|NM|706-2^Basophils^LN||0|%|||||F|||201512212329
OBX|18|NM|704-7^Basophils^LN||0.00|10*9/L|< 0.21||||F
OBX|19|FT|5909-7^Interpretation^LN||Comment:\.br\Mild monocytosis and borderline high mean cell volume.
Other significant haematology parameters are within normal limits for age and sex.\.br\||||||F|||
201512212329
```

When this message is received an Acknowledgement message is produced and returned to the laboratory.

ACK Message

```
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY:3.1.2^L|Demo Server^1FFA8984-7166-4655-B195-7B4FFFD2F136^GUID|
EQUATORDXTRAY^EQUATORDXTRAY:3.1.2 (Build 6387) [win32-i386] {SVV=76;DBV=76}^L|QML^2184^AUSNATA|
20160612150923+1000||ACK^R01|HOM06121509607-198|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||||AUS
MSA|AA|BGC06121502965-8968
```

These two messages are the backbone of result delivery and acknowledgement of delivery for pathology delivery. The first message is the results of the laboratory evaluation (a document), in this case a Full Blood Count, with a message wrapper to address the message and enable the delivery to be confirmed by the second message which is produced by the recipient and returned to the laboratory. The security and authentication around delivery is out of scope of this standard.

Messages are a stream of text which is divided into segments by the CR (ASCII 13) character. Each segment starts with a three letter code identifying the content of the segment. e.g. "MSH", "PID", "OBX" etc. These segments are further defined by the standard to contain fields which are separated by the "|" character. Each field can optionally repeat and each repeat (if present) is separated by the "~" character. The fields themselves are divided into components by the "^" character and the components are divided into SubComponents by the "&" character. There are no levels of hierarchy possible below this. The text content of Fields/components or subcomponents must escape any delimiters used in HL7 ie |^~\& or Line breaks (ASCII 13/10). Escape sequences are provided for this. e.g. \.br\ replaces a line break in the original text.

The segments in a message are specified by the standard and are ordered, can be optional and can optionally repeat. Each message type, which is specified in the MSH segment has its own segment structure, but all start with a MSH segment. This creates a hierarchy at the level of the specific message. The full structure of a ORU^R01 message (The main message used to deliver results) is detailed below. This is the full international message structure and in Australia PV1 has been made mandatory and some optional segments have been removed. The Australian message structure is detailed in the section on Observation Reporting.

Legend:

"{}" Repeat

"[]" Optional

Australian ORU^R01 Message Structure

```
ORU^R01           Unsolicited Observation Message
MSH Message Header
{
    PID Patient Identification
    [
       [PD1] Additional Demographics
       [{NK1}] Next of Kin/Associated Parties
       PV1 Patient Visit
       [PV2] Patient Visit - Additional Info
    ]
    {
        [ORC] Order common
        OBR Observations Report ID
        [CTD] Contact Data
        {
            [OBX] Observation/Result
        }
    }
}
```

```
[DSC] Continuation Pointer
```

Note that the message structure has been constrained compared with the international standard. This link demonstrates the original message structure: International ORU Structure (see page 118)

In the example message the MSH segment (Line 1) gives this message a Unique ID "BGC06121502965-8968" and Indicated it was sent by ACME Pathology "ACME Pathology^7654^AUSNATA". The response, the ACK^R01 message, indicates that this message has been received using the Message Acknowledgment Segment (MSA, Line 2) with the original message ID "MSA|AA|BGC06121502965-8968" . The "AA" indicates "Application Accept".

In the PV1 segment, in field 9, the provider this message was delivered to is indicated as "0191324T^SPECIALIST^ANDREW^^^DR^^^AUSHICPR^L^^^PRN"

The message contains a report. The report header is in the OBR Segment (Line 5) and the report has a Unique ID which will never change even if the report is updated "15-57243112-CBC-0^ACME Pathology^7654^AUSNATA". It also gives the name of the report and who ordered it and who has been sent copies of the report along with the date the test was done.

The OBX segments, on lines 6-24, contain the atomic data that form the actual result. Each atomic result is identified with a code (e.g. Line 7 "718-7^Haemoglobin^LN") and a data type, in this case mostly Numeric(NM).

The details of the other fields and conventions, localized for Australia, are specified in this standard, which should be read in concert with the International standard.

In the case of an electronic order a ORM^O01 message is sent to the laboratory and this is responded to with a ORR^O02 message.

Example Order Message

```
MSH|^~\&|MERIDIAN^MERIDIAN:3.1.4 (Build 6934) [win32-i386]^L|Buderim GE
Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID||ACME Pathology^7654^AUSNATA|20160814205041+1000||
ORM^O01^ORM_O01|XX08142050015-2604|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||AL|AL|AUS
PID|1|....
PV1||O|||||||||||||V1||||BULKBILL
ORC|NW|BGC-00013065-1^Buderim GE Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID||BGC-00013065^Buderim GE
Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID|||||201608142050+1000|||
0191324T^SPECIALIST^ANDREW^K^^DR^^^AUSHICPR^L^^^UPIN|||201608142049+1000||||||Buderim GE Centre
OBR|1|BGC-00013065-1^Buderim GE Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID||26604007^Full Blood
Count^SCT|||||||L|||||0191324T^SPECIALIST^ANDREW^K^^DR^^^AUSHICPR^L^^^UPIN||||||||||^^^^^R|
254327KW^BLOGGS^DAMIEN^^^DR^^^AUSHICPR^L^^^UPIN||||||||||
^Pregnant:False~^Fasting:True~^Radiotherapy:False~^Hormonal Therapy:False
OBX|1|FT|11492-6^History and Physical Notes^LN||This is a test message\.br\||||||F|||201608142050+1000
```

This message is requesting a Full Blood Count encoded as "26604007^Full Blood Count^SCT" from ACME Pathology Laboratories encoded as "ACME Pathology^7654^AUSNATA" with an order number of "BGC-00013065-1^Buderim GE Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID". "ORC|NW|" indicates this is a new order. In the order we specify the ordering provider in the ORC segment which is "0191324T^SPECIALIST^ANDREW^K^^DR^^^AUSHICPR^L^^^UPIN" and request a copy be sent to "254327KW^BLOGGS^DAMIEN^^^DR^^^AUSHICPR^L^^^UPIN" in the OBR Segment.

The response to this message is as below

The ORR response to an order message

```
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY:3.1.4 (Build 6896) [win32-i386] {SVV=78;DBV=76}^L|Buderim GE
Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID|MERIDIAN^MERIDIAN:3.1.4 (Build 6934) [win32-i386]^L|
```



```
Buderim GE Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID|20160814205104+1000||ORR^O02|
BGC08142051838-6830|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||AL|AL|AUS
MSA|AA|XX08142050015-2604
PID|1|....
ORC|OK|BGC-00013065-1^Buderim GE Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID||BGC-00013065^Buderim GE
Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID|||||201608142050+1000|||
0191324T^SPECIALIST^ANDREW^K^^DR^^^AUSHICPR^L^^^UPIN|||201608142049+1000||||||Buderim GE Centre
OBR|1|BGC-00013065-1^Buderim GE Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID||26604007^Full Blood
Count^SCT|||||||L|||||0191324T^SPECIALIST^ANDREW^K^^DR^^^AUSHICPR^L^^^UPIN||||||||||^^^^^R|
254327KW^BLOGGS^DAMIEN^^^DR^^^AUSHICPR^L^^^UPIN||||||||||
^Pregnant:False~^Fasting:True~^Radiotherapy:False~^Hormonal Therapy:False
```

The ORR message confirms the tests ordered back to the placer and may contain the laboratory number(s).

The MSA segment "MSA|AA|XX08142050015-2604" indicates this message has been accepted and the ORC value of "ORC|OK|" indicates the order has been accepted.

The combination of the ORU^R01 report message and its response and the ORM^O01 order message and its acknowledgement are the backbone of pathology messaging. The details of the order and report messages are covered in subsequent sections. Segments common to all message processing are covered in this section. In some settings the messages and segments used in the examples will be all that is encountered in normal usage but the international standard covers similar messages used in queries for orders and results and these will be seen in some settings but are not covered in this guide.

Messages can be batched into files using a single batch inside a File Header structure as illustrated below. In Australia only one Batch is supported but a batch can contain any number of messages. The main purpose of this wrapper is to ensure the collection of messages has not been truncated in transport as the file should end with a BTS and FTS and this should be checked for when processing files. The specification of the segments used in many HL7v2 message types is provided in section 2.1, where usage notes and some example values are provided.

Message Structure for Batches

```
FHS
BHS
  {
    MSH
    {Any segments required by message}
  }
BTS
FTS
```

Example of Message in File Header

```
FHS|^~\&|EQUATORDXTRAY:0.12.8 (Build 310)|1FFA8984-7166-4655-B195-7B4FFFD2F136|||20050417220634+1000
BHS|^~\&|EQUATORDXTRAY:0.12.8 (Build 310)|1FFA8984-7166-4655-B195-7B4FFFD2F136|||20050417220634+1000
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY:0.12.8 (Build 310)^L|Demo Practice^1FFA8984-7166-4655-
B195-7B4FFFD2F136^GUID|||20050417220634+1000||ORU^R01|20050417.736428|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.
1&&HL7AU|||AL|AL|AUS
PID|1||100333^^^Medical-Objects&7C3E3682-91F6-11D2-8F2C-444553540000&GUID^SR^Demo Practice&1FFA8984-7166
-4655-B195-7B4FFFD2F136&GUID||TESTER^Testy^^^Mr^^L||19900101|M|||3 Drury Lane^^NAMBOUR^QLD^4560^AUS^H||
61(07)54455055^PRN^PH^^61^07^54455055|||||||||||||||||N
PV1|1|O|||||0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN|
0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN||||||N
ORC|RE||E062CF28-A67B-45D6-A5F8-B1423EDFB093^Demo Server^1FFA8984-7166-4655-B195-7B4FFFD2F136^GUID||
CM|||||||0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN
```

```
OBR|1||E062CF28-A67B-45D6-A5F8-B1423EDFB093^Demo Practice^1FFA8984-7166-4655-B195-7B4FFFD2F136^GUID|11486
-8^Chemotherapy Record^LN|||20050417+1000|||||||||0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN||From
Demo Practice in File 20050417.736425 dated 17.04.2005||LN=E062CF28-A67B-45D6-A5F8-B1423EDFB093||
200504172206+1000||PHY|C||^^^20050417+1000|0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN||||
0191322W&ANDERSON&THOMAS&&&Dr&&AUSHICPR&AUSHICPR
OBX|1|NM|3141-9^Weight^LN||70|kg^^ISO+|||||F
OBX|2|NM|28325-9^Performance Status^LN||2||||||F
OBX|3|ST|21946-9^Chemotherapy Rx^LN||CHOP||||||F
OBX|4|FT|11486-8^^LN||This is a record of chemo being given.\.br\||||||F
BTS|1||1
FTS|1
```

1.8 ACKNOWLEDGEMENT PROCESSING

The International HL7 standard specifies two levels of acknowledgement processing: Original and Enhanced Modes.

(a) Original Mode, specifies that the message be acknowledged at the application level. The reasoning is that it is not sufficient to know that the underlying communications system guaranteed delivery of the message. It is also necessary to know that the receiving application processed the data successfully at a logical application level.

(b) Enhanced mode, The HL7 acknowledgment paradigm has been extended to distinguish both accept and application acknowledgments. With a positive accept acknowledgment, the receiving system commits the message to safe storage in a manner that releases the sending system from the need to resend the message. After the message has been processed by the receiving system, an application acknowledgment may be used to return the resultant status to the sending system.

This Australian HL7 standard requires the use of Enhanced Mode Acknowledgment and this is described in 8 Acknowledgement (see page 365).

2 Patient Administration for Pathology

2.1 Message Control Segments

The following segments are necessary to support the functionality described in this chapter.

If a value is the usual default for use in Australia it has been highlighted in blue.

Figure 2-1. HL7 message segments

Segment Name	HL7 Section Reference
BHS (see page 27)	2.1.2
BTS (see page 29)	2.1.3
DSC (see page 30)	2.1.4
ERR (see page 31)	2.1.5
FHS (see page 31)	2.1.6
FTS (see page 33)	2.1.7
MSA (see page 34)	2.1.8
MSH (see page 36)	2.1.9

2.1.2 BHS - batch header segment

The BHS segment defines the start of a batch.

HL7 Attribute Table - BHS – Batch Header

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	1	ST	R			00081	Batch Field Separator
2	3	ST	R			00082	Batch Encoding Characters
3	15	ST	O			00083	Batch Sending Application
4	20	ST	O			00084	Batch Sending Facility
5	15	ST	O			00085	Batch Receiving Application
6	20	ST	O			00086	Batch Receiving Facility
7	26	TS	O			00087	Batch Creation Date/Time

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
8	40	ST	O			00088	Batch Security
9	20	ST	O			00089	Batch Name/ID/Type
10	80	ST	O			00090	Batch Comment
11	20	ST	O			00091	Batch Control ID
12	20	ST	O			00092	Reference Batch Control ID

2.1.2.0 BHS field definitions

2.1.2.1 BHS-1 Batch field separator (ST) 00081

Definition: This field contains the separator between the segment ID and the first real field*, BHS-2-batch* encoding characters. As such it serves as the separator and defines the character to be used as a separator for the rest of the message. Recommended value is |,(ASCII 124).

2.1.2.2 BHS-2 Batch encoding characters (ST) 00082

Definition: This field contains the four characters in the following order: the component separator, repetition separator, escape characters, and subcomponent separator. Australian values are ^~\& (ASCII 94,126, 92, and 38, respectively).

2.1.2.3 BHS-3 Batch sending application (ST) 00083

Definition: This field uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined.

2.1.2.4 BHS-4 Batch sending facility (ST) 00084

Definition: This field contains the address of one of several occurrences of the same application within the sending system. Absent other considerations, the Medicare Provider ID might be used with an appropriate sub-identifier in the second component. Entirely user-defined.

2.1.2.5 BHS-5 Batch receiving application (ST) 00085

Definition: This field uniquely identifies the receiving applications among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined.

2.1.2.6 BHS-6 Batch receiving facility (ST) 00086

Definition: This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations. See comments BHS-4-batch sending facility. Entirely site-defined.

2.1.2.7 BHS-7 Batch creation date/time (TS) 00087

Definition: This field contains the date/time that the sending system created the message. If the time zone is specified, it will be used throughout the message as the default time zone.

2.1.2.8 BHS-8 Batch security (ST) 00088

Definition: In some applications of HL7, this field is used to implement security features. Its use is not yet further specified.

2.1.2.9 BHS-9 Batch name/ID/type (ST) 00089

Definition: This field can be used by the application processing the batch. It can have extra components if needed.

2.1.2.10 BHS-10 Batch comment (ST) 00090

Definition: This field is a comment field that is not further defined in the HL7 protocol.

2.1.2.11 BHS-11 Batch control ID (ST) 00091

Definition: This field is used to uniquely identify a particular batch. It can be echoed back in BHS-12-reference batch control ID if an answering batch is needed.

2.1.2.12 BHS-12 Reference batch control ID (ST) 00092

Definition: This field contains the value of BHS-11-batch control ID when this batch was originally transmitted.

Not present if this batch is being sent for the first time. See definition for BHS-11-batch control ID.

2.1.3 BTS - batch trailer segment

The BTS segment defines the end of a batch.

2.1.3.0 BTS field definitions

HL7 Attribute Table - BTS – Batch Trailer

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	10	ST	O			00093	Batch Message Count
2	80	ST	O			00090	Batch Comment
3	100	NM	O	Y		00095	Batch Totals

2.1.3.1 BTS-1 Batch message count (ST) 00093

Definition: This field contains the count of the individual messages contained within the batch.

2.1.3.2 BTS-2 Batch comment (ST) 00090

Definition: This field is a comment field that is not further defined in the HL7 protocol.

2.1.3.3 BTS-3 Batch totals (NM) 00095

Definition: We encourage new users of this field to use the HL7 Version 2.3 data type of NM and to define it as “repeating.” This field contains the batch total. Only a single Batch is allowed in Australia.

This field may be defined as a CM data type for backward compatibility with HL7 Versions 2.2 and 2.1with each total being carried as a separate component. Each component in this case is an NM data type.

2.1.4 DSC - continuation pointer segment

The DSC segment is used in the continuation protocol.

2.1.4.0 DSC field definitions

HL7 Attribute Table - DSC – Continuation Pointer

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	180	ST	O			00014	Continuation Pointer
2	1	ID	O		0398 (see page 30)	01354	Continuation Style

2.1.4.1 DSC-1 Continuation pointer (ST) 00014

Definition: This field contains the continuation pointer. In an initial query, this field is not present. If the responder returns a value of null or not present, then there is no more data to fulfill any future continuation requests. For use with continuations of unsolicited messages, see HL7 International Standard chapter 5 and section 2.15.2, "Continuation messages and segments.” Note that continuation protocols work with both display- and record-oriented messages.

2.1.4.2 DSC-2 Continuation style (ID) 01354

Definition: Indicates whether this is a fragmented message (see HL7 International Standard Section 2.15.2, "Continuation messages and segments"), or if it is part of an interactive continuation message (see HL7 International Standard Section 5.6.3, "Interactive continuation of response messages").

Refer to HL7 Table 0398 – Continuation style code for valid values.

HL7 Table 0398 - Continuation style code

Value	Description
F	Fragmentation
I	Interactive Continuation

2.1.5 ERR - error segment

The ERR segment is used to add error comments to acknowledgment messages.

HL7 Attribute Table - ERR –Error

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	80	CM	R	Y		00024	Error Code and Location

2.1.5.0 ERR field definition

2.1.5.1 ERR-1 Error code and location (CM) 00024

Components: <segment ID (ST)> ^ <sequence (NM)> ^ <field position (NM)> ^ <code identifying error (CE)>

Definition: This field identifies an erroneous segment in another message. The second component is an index if there is more than one segment of type <segment ID>. For systems that do not use the HL7 Encoding Rules, the data item number may be used for the third component. The fourth component (which references HL7 Table 0357 - Message error condition codes (see page 35), (as a CE data type) is restricted from having any subcomponents as the subcomponent separator is now the CE's component separator.

2.1.6 FHS - file header segment

The FHS segment is used to head a file as defined in Overview.

HL7 Attribute Table - FHS - File Header

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	1	ST	R			00067	File Field Separator
2	4	ST	R			00068	File Encoding Characters
3	15	ST	O			00069	File Sending Application

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
4	20	ST	O			00070	File Sending Facility
5	15	ST	O			00071	File Receiving Application
6	20	ST	O			00072	File Receiving Facility
7	26	TS	O			00073	File Creation Date/Time
8	40	ST	O			00074	File Security
9	20	ST	O			00075	File Name/ID
10	80	ST	O			00076	File Header Comment
11	20	ST	O			00077	File Control ID
12	20	ST	O			00078	Reference File Control ID

2.1.6.0 FHS field definitions

2.1.6.1 FHS-1 File field separator (ST) 00067

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.1.6.2 FHS-2 File encoding characters (ST) 00068

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.1.6.3 FHS-3 File sending application (ST) 00069

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.1.6.4 FHS-4 File sending facility (ST) 00070

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.1.6.5 FHS-5 File receiving application (ST) 00071

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.1.6.6 FHS-6 File receiving facility (ST) 00072

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.1.6.7 FHS-7 File creation date/time (TS) 00073

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.1.6.8 FHS-8 File security (ST) 00074

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.1.6.9 FHS-9 File name/ID (ST) 00075

Definition: This field can be used by the application processing file. Its use is not further specified.

2.1.6.10 FHS-10 File header comment (ST) 00076

Definition: This field contains the free text field, the use of which is not further specified.

2.1.6.11 FHS-11 File control ID (ST) 00077

Definition: This field is used to identify a particular file uniquely. It can be echoed back in FHS-12-reference file control ID.

2.1.6.12 FHS-12 Reference file control ID (ST) 00078

Definition: This field contains the value of FHS-11-file control ID when this file was originally transmitted.

Not present if this file is being transmitted for the first time.

2.1.7 FTS - file trailer segment

The FTS segment defines the end of a file.

HL7 Attribute Table - FTS - File Trailer

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	10	NM	O			00079	File Batch Count
2	80	ST	O			00080	File Trailer Comment

2.1.7.0 FTS field definitions

2.1.7.1 FTS-1 File batch count (NM) 00079

Definition: This field contains the number of batches contained in this file. In Australia there is a maximum of 1 batch in a file.

2.1.7.2 FTS-2 File trailer comment (ST) 00080

Definition: The use of this free text field is not further specified.

2.1.8 MSA - message acknowledgment segment

The MSA segment contains information sent while acknowledging another message.

HL7 Attribute Table - MSA - Message Acknowledgment

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	2	ID	R		0008 (see page 34)	00018	Acknowledgment Code
2	**20**	**ST**	**R**			**00010**	**Message Control ID**
3	80	ST	O			00020	Text Message
4	15	NM	O			00021	Expected Sequence Number
5	1	ID	B		0102 (see page 35)	00022	Delayed Acknowledgment Type
6	250	CE	O		0357 (see page 35)	00023	Error Condition

The sending system must return the *Message Control ID* from the received message in the MSA segment.

2.1.8.0 MSA field definitions

2.1.8.1 MSA-1 Acknowledgment code (ID) 00018

Definition: This field contains an acknowledgment code, see message processing rules. Refer to HL7 Table 0008 - Acknowledgment code (see page 34) for valid values.

HL7 Table 0008 - Acknowledgment code

Value	Description
AA	Original mode: Application Accept - Enhanced mode: Application acknowledgment: Accept
AE	Original mode: Application Error - Enhanced mode: Application acknowledgment: Error
AR	Original mode: Application Reject - Enhanced mode: Application acknowledgment: Reject
CA	Enhanced mode: Accept acknowledgment: Commit Accept
CE	Enhanced mode: Accept acknowledgment: Commit Error
CR	Enhanced mode: Accept acknowledgment: Commit Reject

2.1.8.2 MSA-2 Message control ID (ST) 00010

Definition: This field contains the message control ID of the message sent by the sending system. It allows the sending system to associate this response with the message for which it is intended.

2.1.8.3 MSA-3 Text message (ST) 00020

Definition: This optional field further describes an error condition. This text may be printed in error logs or presented to an end user.

Use of MSA-3-text message and MSA-6-error condition are deprecated in favor of ERR-1-Error code and location. The ERR segment allows for richer descriptions of the erroneous conditions.

2.1.8.4 MSA-4 Expected sequence number (NM) 00021

Definition: This optional numeric field is used in the sequence number protocol.

2.1.8.5 MSA-5 Delayed acknowledgment type (ID) 00022

Definition: ***This field has been retained for backward compatibility.*** This field is used only as described above, in the HL7 International Standard Section 2.13.2, “Application (level 7) processing rules, deferred processing two phase reply (original acknowledgment mode only).” Otherwise this field is not used.

HL7 Table 0102 - Delayed acknowledgment type

Value	Description
D	Message received, stored for later processing
F	acknowledgment after processing

2.1.8.6 MSA-6 Error condition (CE) 00023

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field allows the acknowledging system to use a user-defined error code to further specify AR or AE type acknowledgments. This field is a generalized replacement for *MSA-3-text message* .

Use of *MSA-3-text* message and *MSA-6-error condition* are deprecated in favor of *ERR-1 -Error code and* location. The ERR segment allows for richer descriptions of the erroneous conditions.

The Message Error Condition codes are defined by HL7 Table 0357 - Message error condition codes (see page 35).

HL7 Table 0357 - Message error condition codes

Error Condition Code	Error Condition Text	Description/Comment
Success		

Error Condition Code	Error Condition Text	Description/Comment
0	Message accepted	Success. Optional, as the AA conveys success. Used for systems that must always return a status code.
Errors		
100	Segment sequence error	The message segments were not in the proper order, or required segments are missing.
101	Required field missing	A required field is missing from a segment
102	Data type error	The field contained data of the wrong data type, e.g. an NM field contained "FOO".
103	Table value not found	A field of data type ID or IS was compared against the corresponding table, and no match was found.
Rejection		
200	Unsupported message type	The Message Type is not supported.
201	Unsupported event code	The Event Code is not supported.
202	Unsupported processing id	The Processing ID is not supported.
203	Unsupported version id	The Version ID is not supported.
204	Unknown key identifier	The ID of the patient, order, etc., was not found. Used for transactions *other* than additions, e.g. transfer of a non-existent patient.
205	Duplicate key identifier	The ID of the patient, order, etc., already exists. Used in response to addition transactions (Admit, New Order, etc.).
206	Application record locked	The transaction could not be performed at the application storage level, e.g. database locked.
207	Application internal error	A catchall for internal errors not explicitly covered by other codes.

2.1.9 MSH - message header segment

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

HL7 Attribute Table - MSH - Message Header

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	1	ST	R			00001	Field Separator
2	4	ST	R			00002	Encoding Characters
3	180	HD	O		0361 (see page 38)	00003	Sending Application
4	180	HD	O		0362 (see page 39)	00004	Sending Facility
5	180	HD	O		0361 (see page 38)	00005	Receiving Application
6	180	HD	O		0362 (see page 39)	00006	Receiving Facility
7	26	TS	R			00007	Date/Time Of Message
8	40	ST	O			00008	Security
9	15†	CM	R		0076 / 0003	00009	Message Type
10	199††	ST	R			00010	Message Control ID
11	3	PT	R			00011	Processing ID
12	250 ††††	VID	R		0104 (see page 42)	00012	Version ID
13	15	NM	O			00013	Sequence Number
14	180	ST	O			00014	Continuation Pointer
15	2	ID	R†††		0155 (see page 44)	00015	Accept Acknowledgment Type
16	2	ID	R†††		0155 (see page 44)	00016	Application Acknowledgment Type
17	3	ID	R†††		0399 (see page 44)	00017	Country Code
18	16	ID	O	N †††††	0211 (see page 54)	00692	Character Set
19	250	CE	R†††			00693	Principal Language Of Message
20	20	ID	O		0356 (see page 56)	01317	Alternate Character Set Handling Scheme
21	10	ID	O	Y	0449 (see page 56)	01598	Conformance Statement ID

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
22							Reserved
23							Reserved
24							Reserved
25							Reserved
26							Reserved
27	250††† ††	CWE	O	Y		02430	Security Handling Instructions

† Australian variation to HL7 V2.4 with the length changed from 13 to 15 characters.

†† Australian variation to HL7 V2.4 with the length changed from 20 to 199 characters to accommodate a globally unique identifier. This has been pre-adopted from HL72.6-2.9.

†††Australian variation to HL7 V2.4, field optionality has been changed to required.

††††Australian variation to HL7 V2.4 with the length changed from 60 to 250 characters.

††††† Australian variation to HL7 V2.4, field is pre-adopted from HL7 International v2.9. Length of 250 has been set consistent with the CWE length specified in section 3.6 CWE – coded with exceptions.

†††††† Australian variation to HL7 V2.4, field repeat is disallowed.

2.1.9.0 MSH field definitions

2.1.9.1 MSH-1 Field separator (ST) 00001

Definition: This field contains the separator between the segment ID and the first real field, *MSH-2*-encoding characters. As such it serves as the separator and defines the character to be used as a separator for the rest of the message. Recommended value is |, (ASCII 124).

2.1.9.2 MSH-2 Encoding characters (ST) 00002

Definition: This field contains the four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator. Recommended values are ^~\& (ASCII 94,126, 92, and 38, respectively). In the Australian context the separators are fixed to these values.

2.1.9.3 MSH-3 Sending application (HD) 00003

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined.

User-defined Table 0361-Sending/receiving application (see page 38) is used as the user-defined table of values for the first component.

User-defined Table 0361 – Sending/receiving application

Value	Description
MERIDIAN^MERIDIAN:3.1.4 (Build 6934) [win32-i386]^L	Example application identifier
Best Practice 1.8.5.743	Application identifier with only namespace ID valued
PRSLT^HL7PIT^L	Example Lab Sending application

Note: By site agreement, implementors may continue to use User-defined Table 0300 – Namespace ID (see page 160) for the first component.

2.1.9.4 MSH-4 Sending facility (HD) 00004

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field further describes the sending application, *MSH-3-sending application* . With the promotion of this field to an HD data type, the usage has been broadened to include not just the sending facility but other organizational entities such as a) the organizational entity responsible for sending application; b) the responsible unit; c) a product or vendor's identifier, etc. Entirely site-defined.

User-defined Table 0362 – Sending/receiving facility (see page 39) is used as the HL7 identifier for the user-defined table of values for the first component.

User-defined Table 0362 – Sending/receiving facility

Value	Description
Buderim GE Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID	Example sending facility identified with GUID
QML^2184^AUSNATA	Lab example using AUSNATA as coding scheme

Note: By site agreement, implementers may continue to use User-defined Table 0300 – Namespace ID (see page 160) for the first component.

2.1.9.5 MSH-5 Receiving application (HD) 00005

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field uniquely identifies the receiving application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined. User-defined Table 0361- Sending/receiving application (see page 38) is used as the HL7 identifier for the user-defined table of values for the first component.

Note: By site agreement, implementers may continue to use User-defined Table 0300 – Namespace ID (see page 160) for the first component.

2.1.9.6 MSH-6 Receiving facility (HD) 00006

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations.

User-defined Table 0362 – Sending/receiving facility (see page 39) is used as the HL7 identifier for the user-defined table of values for the first component. Entirely site-defined.

Note: By site agreement, implementers may continue to use User-defined Table 0300 – Namespace ID (see page 160) for the first component.

2.1.9.7 MSH-7 Date/time of message (TS) 00007

Definition: This field contains the date/time that the sending system created the message. If the time zone is specified, it will be used throughout the message as the default time zone.

Note: This field was made required in version 2.4. Messages with versions prior to 2.4 are not required to value this field. This usage supports backward compatibility.

2.1.9.8 MSH-8 Security (ST) 00008

Definition: In some applications of HL7, this field is used to implement security features. Its use is not yet further specified.

2.1.9.9 MSH-9 Message type (CM) 00009

Components: <message type (ID)> ^ <trigger event (ID)> ^ <message structure (ID)>

Definition: This field contains the message type, trigger event, and the message structure ID for the message.

The first component is the message type code defined by HL7 Table 0076 - Message type. This table contains values such as ACK, ADT, ORM, ORU etc. See HL7 International Standard section 2.17.1 for complete listing.

The second component is the trigger event code defined by HL7 Table 0003 - Event type. This table contains values like A01, O01, R01 etc. See HL7 International Standard section 2.17.2 for a complete listing

The third component is the abstract message structure code defined by *HL7 Table 0354 - Message structure*.

This table has two columns. The first column contains the value of this code, which describes a particular HL7 “abstract message structure definition” in terms of segments, as defined in HL7 International Standard sections 2.12, “CHAPTER FORMATS FOR DEFINING HL7 MESSAGES” and 2.12.1, “HL7 abstract message syntax example”. The second column of table 0354 lists the various HL7 trigger events that use the particular abstract message definition. For example, the message structure code ADT_A01 describes the single abstract message structure used by the trigger events A01, A04, A05, A08, A13, A14, A28 and A31. See HL7 International Standard section 2.17.3 for a complete listing.

Note: Australian variation to HL7 V2.4 with the length changed from 13 to 15 characters.

2.1.9.10 MSH-10 Message control ID (ST) 00010

Definition: This field contains a number or other identifier that uniquely identifies the message. The receiving system echoes this ID back to the sending system in the Message acknowledgment segment (MSA).
The *Message Control ID* is not an order number for the request nor is it a specimen identifier used by the pathology provider. It is a unique internal identifier for one specific message originating from a particular site. This internal field in the message will not conflict when messages from different placers/fillers with the same *Message Control ID* are received. All systems should ensure that their data tables are not keyed uniquely using the value from *Message Control ID*.

If a patient has one MSH with multiple OBR segments and if there is an error in one result then all results in the message are rejected, not just the OBR with the error. However, when one MSH is sent for each OBR then only the result with the error is rejected.

The recommended format for *Message Control ID* is a combination of two or three components, including:
1) The first component is to identify the sending facility.
2) The second (optional) component is a date in YYYYMMDD format.
3) The third component is an incremental counter starting at number 1.
The generalised format is:

<sending facility>_<date>.n{nnnnnnn..}

Example:

dhm_20160505.2178

qml_20160915.789

Note: It is not intended for the full AUSNATA form to be used, only the first component of the AUSNATA code.

For placers, they could use their <site code> or <site code>_<date> e.g. px_45678912.25

Note: Australian variation to HL7 V2.4 with the length changed from 20 to 36 characters to accommodate a globally unique identifier (GUID).

2.1.9.11 MSH-11 Processing ID (PT) 00011

Components: <processing ID (ID)> ^ <processing mode (ID)>

Definition: This field is used to decide whether to process the message as defined in HL7 Application (level 7) Processing rules. The first component defines whether the message is part of a production, training, or debugging system (refer to HL7 Table 0103 - Processing ID (see page 41) for valid values). The second component defines whether the message is part of an archival process or an initial load (refer to HL7 Table 0207 - Processing mode (see page 41) for valid values). This allows different priorities to be given to different processing modes. The value used in normal usage is highlighted in blue.

HL7 Table 0103 - Processing ID

Value	Description
D	Debugging
P	Production
T	Training

HL7 Table 0207 - Processing mode

Value	Description
A	Archive
R	Restore from archive
I	Initial load

Value	Description
T	Current processing, transmitted at intervals (scheduled or on demand)
Not present	Not present (the default, meaning current processing)

2.1.9.12 MSH-12 Version ID (VID) 00012

Components: <version ID (ID)> ^ <internationalization code (CE)> ^ <internal version ID (CE)>

Definition: This field is matched by the receiving system to its own version to be sure the message will be interpreted correctly. Beginning with Version 2.3.1, it has two additional “internationalization” components, for use by HL7 international affiliates. The <internationalization code> is CE data type (using the ISO country codes where appropriate) which represents the HL7 affiliate. The <internal version ID> is used if the HL7 Affiliate has more than a single ‘local’ version associated with a single US version. The <internal version ID> has a CE data type, since the table values vary for each HL7 Affiliate.

HL7 Table 0104 —Version ID

Value	Description	
~~2.0~~	~~Release 2.0~~	~~September 1988~~
~~2.0D~~	~~Demo 2.0~~	~~October 1988~~
~~2.1~~	~~Release 2. 1~~	~~March 1990~~
~~2.2~~	~~Release 2.2~~	~~December 1994~~
~~2.3~~	~~Release 2.3~~	~~March 1997~~
~~2.3.1~~	~~Release 2.3.1~~	~~May 1999~~
2.4	Release 2.4	November 2000

To indicate compliance with this localisation the <internationalization code (CE)> must be "AUS&Australia&ISO3166_1".

The <internal version ID (CE)> component must be valued as follows to indicate the profile that is being adhered by the sender.

When the profile is referenced in AU FHIR Provider Directory[5] Endpoint resource payloadType[6]attribute, append the internal version ID identifier component to the following base URL http://ns.hl7.org.au/hl7v2/profiles/. The allowed values in the following table should be maintained into the Australian Endpoint Payload Types[7] value set FHIR resource.

The year and serial number component YYYYXX (where YYYY is a 4 digit year, and XX is a 2 digit serial number) of the internal version ID may change on publication of this specification to align with the version numbering. e.g. "HL7AUSD-STD-OO-ADRM-2018.1" an ID becomes: HL7AU-OO-REF-SIMPLIFIED-201801 where there is a substantive change to the profile otherwise it will remain unchanged and reflect the time of the last substantial change. (A

5 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint.html
6 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint-definitions.html#Endpoint.payloadType
7 http://build.fhir.org/ig/hl7au/au-fhir-pd/ValueSet-endpoint-payload-type.html

serial number XX is used instead of a date as often the date of publication is unknown, this allows for advance drafting prior to release)

These are identifiers and they are not intended to be parsed.

HL7 Table 01043—Internal Version ID

Internal version ID value	Description of use	Profile URI for use in FHIR Provider Directory
HL7AU-OO-ORM-201701	ORM Order messages based on this specification	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-ORM-201701
HL7AU-OO-ORU-201701	ORU messages based on this specification	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-ORU-201701
HL7AU-OO-ACK-201701	ACK^R01, ACK^O01 acknowledgement messages ACK messages where the message type is ACK and structure is a generic ACK. The trigger event may vary.	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-ACK-201701
HL7AU-OO-ORR-201701	Order Response messages	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-ORR-201701
HL7AU-OO-ACK-READ-202001	Application read acknowledgements (See 8.4 User Read Acknowledgements (see page 372))	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-ACK-READ-202001
HL7AU-OO-REF-SIMPLIFIED-201706-L1	Simplified Referral Level 1 REF messages (See A8.2.1.1 Referral Level 1 (see page 482))	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-REF-SIMPLIFIED-201706-L1
HL7AU-OO-REF-SIMPLIFIED-201706	*Simplified Referral Level 2 REF messages (See A8.2.1.2 Referral Level 2 (see page 483))	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-REF-SIMPLIFIED-201706
HL7AU-OO-REF-SIMPLIFIED-201706	*For RRI message application acknowledgements	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-REF-SIMPLIFIED-201706/RRI
HL7AU-OO-OSQ-202001	Query for order status. See Section 5.3.	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-OSQ-202001
HL7AU-OO-OSR-202001	Query response for order status. See Section 5.3.	http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-OSR-202001

*Note that the internal version ID value is shared between multiple message types e.g. REF / RRI.

To indicate compliance with Simplified Referral profile see Appendix 8 Simplified REF profile A8.3 Sender Conformance (see page 483).

To indicate compliance with other profiles, refer to the profile specification.

2.1.9.13 MSH-13 Sequence number (NM) 00013

Definition: A non-null value in this field implies that the sequence number protocol is in use. This numeric field is incremented by one for each subsequent value.

2.1.9.14 MSH-14 Continuation pointer (ST) 00014

Definition: This field is used to define continuations in application-specific ways.

Only the sender of a fragmented message values this field.

2.1.9.15 MSH-15 Accept acknowledgment type (ID) 00015

Definition: This field identifies the conditions under which accept acknowledgments are required to be returned in response to this message. Required for enhanced acknowledgment mode. Refer to HL7 Table 0155 - Accept/application acknowledgment conditions (see page 44) for valid values.

Note: In the Australian context acknowledgements must always be used and the value must be "AL".

2.1.9.16 MSH-16 Application acknowledgment type (ID) 00016

Definition: This field contains the conditions under which application acknowledgments are required to be returned in response to this message. Required for enhanced acknowledgment mode.

The following table contains the possible values for MSH-15-accept acknowledgment type and MSH-16-application acknowledgment type:

HL7 Table 0155 - Accept/application acknowledgment conditions

Value	Description
AL	Always
NE	Never
ER	Error/reject conditions only
SU	Successful completion only

Note: In the Australian context application acknowledgements should be used and the value must be "AL".

2.1.9.17 MSH-17 Country code (ID) 00017

Definition: This field contains the country of origin for the message. It will be used primarily to specify default elements, such as currency denominations. The values to be used are those of ISO 3166, which are reprinted here upon written approval from ANSI.[2]. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code.

2 Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneve, Switzerland

Refer to HL7 Table 0399 – Country code (see page 44) for the 3-character codes as defined by ISO 3166 table.

HL7 Table 0399 – Country code

Value	Description
ABW	ARUBA
AFG	AFGHANISTAN
AFT	FRENCH SOUTHERN TERRITORIES
AGO	ANGOLA
AIA	ANGUILLA
ALB	ALBANIA
AND	ANDORRA
ANT	NETHERLANDS ANTILLES
ARE	UNITED ARAB EMIRATES
ARG	ARGENTINA
ARM	ARMENIA
ASM	AMERICAN SAMOA
ATA	ANTARCTICA
ATG	ANTIGUA AND BARBUDA
AUS	AUSTRALIA
AUT	AUSTRIA
AZE	AZERBAIJAN
BDI	BURUNDI
BEL	BELGIUM
BEN	BENIN
BFA	BURKINA FASO
BGD	BANGLADESH
BGR	BULGARIA
BHR	BAHRAIN
BHS	BAHAMAS
BIH	BOSNIA AND HERZEGOVINA

Value	Description
BLR	BELARUS
BLZ	BELIZE
BMU	BERMUDA
BOL	BOLIVIA
BRA	BRAZIL
BRB	BARBADOS
BRN	BRUNEI DARUSSALAM
BTN	BHUTAN
BVT	BOUVET ISLAND
BWA	BOTSWANA
CAF	CENTRAL AFRICAN REPUBLIC
CAN	CANADA
CCK	COCOS (KEELING) ISLANDS
CHE	SWITZERLAND
CHL	CHILE
CHN	CHINA
CIV	COTE D'VOIRE
CMR	CAMEROON
COD	CONGO, THE DEMOCRATIC REPUBLIC OF THE
COG	CONGO
COK	COOK ISLAND
COL	COLOMBIA
COM	COMOROS
CPV	CAPE VERDE
CRI	COSTA RICA
CUB	CUBA

Value	Description
CXR	CHRISTMAS ISLAND
CYM	CAYMAN ISLANDS
CYP	CYPRUS
CZE	CZECH REPUBLIC
DEU	GERMANY
DJI	DJIBOUTI
DMA	DOMINICA
DNK	DENMARK
DOM	DOMINICAN REPUBLIC
DZA	ALGERIA
ECU	ECUADOR
EGY	EGYPT
ERI	ERITREA
ESH	WESTERN SAHARA
ESP	SPAIN
EST	ESTONIA
ETH	ETHIOPIA
FIN	FINLAND
FJI	FIJI
FLK	FALKLAND ISLANDS (MALVINAS)
FRA	FRANCE
FRO	FAROE ISLANDS
FSM	MICRONESIA, FEDERATED STATES OF
GAB	GABON
GBR	UNITED KINGDOM
GEO	GEORGIA

Value	Description
GHA	GHANA
GIB	GIBRALTAR
GIN	GUINEA
GLP	GUADELOUPE
GMB	GAMBIA
GNB	GUINEA-BISSAU
GNQ	EQUATORIAL GUINEA
GRC	GREECE
GRD	GRENADA
GRL	GREENLAND
GTM	GUATEMALA
GUF	FRENCH GUIANA
GUM	GUAM
GUY	GUYANA
HKG	HONG KONG
HMD	HEARD ISLAND AND MCDONALD ISLANDS
HND	HONDURAS
HRV	CROATIA
HTI	HAITI
HUN	HUNGARY
IDN	INDONESIA
IND	INDIA
IOT	BRITISH INDIAN OCEAN TERRITORY
IRL	IRELAND
IRN	IRAN, ISLAMIC REPUBLIC OF
IRQ	IRAQ

Value	Description
ISL	ICELAND
ISR	ISRAEL
ITA	ITALY
JAM	JAMAICA
JOR	JORDAN
JPN	JAPAN
KAZ	KAZAKSTAN
KEN	KENYA
KGZ	KYRGYZSTAN
KHM	CAMBODIA
KIR	KIRIBATI
KNA	SAINT KITTS AND NEVIS
KOR	KOREA, REPUBLIC OF
KWT	KUWAIT
LAO	LAO PEOPLE'S DEMOCRATIC REPUBLIC
LBN	LEBANNON
LBR	LIBERIA
LBY	LIBYAN ARAB JAMAHIRIYA
LCA	SAINT LUCIA
LIE	LIECHTENSTEIN
LKA	SRI LANKA
LSO	LESOTHO
LTU	LITHUANIA
LUX	LUXEMBOURG
LVA	LATIVA
MAC	MACAU

Value	Description
MAR	MOROCCO
MCO	MONACO
MDA	MOLDOVA, REPUBLIC OF
MDG	MADAGASCAR
MDV	MALDIVES
MEX	MEXICO
MHL	MARSHALL ISLANDS
MKD	MACEDONIA, THE FORMER YUGOSLAV REPUBLIC OF
MLI	MALI
MLT	MALTA
MMR	MYANMAR
MNG	MONGOLIA
MNP	NORTHERN MARIANA ISLANDS
MOZ	MOZAMBIQUE
MRT	MAURITANIA
MSR	MONTSERRAT
MTQ	MARTINIQUE
MUS	MAURITUS
MWI	MALAWI
MYS	MALAYSIA
MYT	MAYOTTE
NAM	NAMIBIA
NCL	NEW CALEDONIA
NER	NIGER
NFK	NORFOLK ISLAND
NGA	NIGERIA

Value	Description
NIC	NICARAGUA
NIU	NIUE
NLD	NETHERLANDS
NOR	NORWAY
NPL	NEPAL
NRU	NAURU
NZL	NEW ZEALAND
OMN	OMAN
PAK	PAKISTAN
PAN	PANAMA
PCN	PITCAIRN
PER	PERU
PHL	PHILIPPINES
PLW	PALAU
PNG	PAPUA NEW GUINEA
POL	POLAND
PRI	PUERTO RICO
PRK	KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF
PRT	PORTUGAL
PRY	PARAGUAY
PYF	FRENCH POLYNESIA
QAT	QATAR
REU	REUNION
ROM	ROMANIA
RUS	RUSSIAN FEDERATION
RWA	RWANDA

Value	Description
SAU	SAUDI ARABIA
SDN	SUDAN
SEN	SENEGAL
SGP	SINGAPORE
SGS	SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS
SHN	SAINT HELENA
SJM	SVALBARD AND JAN MAYEN
SLB	SOLOMON ISLANDS
SLE	SIERRA LEONE
SLV	EL SALVADOR
SMR	SAN MARINO
SOM	SOMALIA
SPM	SAINT PIERRE AND MIQUELON
STP	SAO TOME AND PRINCIPE
SUR	SURINAME
SVK	SLOVAKIA
SVN	SLOVENIA
SWE	SWEDEN
SWZ	SWAZILAND
SYC	SEYCHELLES
SYR	SYRIAN ARAB REPUBLIC
TCA	TURKS AND CAICOS ISLANDS
TCD	CHAD
TGO	TOGO
THA	THAILAND
TJK	TAJIKISTAN

Value	Description
TKL	TOKELAU
TKM	TURKMENISTAN
TMP	EAST TIMOR
TON	TONGA
TTO	TRINIDAD AND TOBAGO
TUN	TUNISIA
TUR	TURKEY
TUV	TUVALU
TWN	TAIWAN, PROVINCE OF CHINA
TZA	TANZANIA, UNITED REPUBLIC OF
UGA	UGANDA
UKR	UKRAINE
UMI	UNITED STATES MINOR OUTLYING ISLANDS
URY	URUGUAY
USA	UNITED STATES
UZB	UZBEKISTAN
VAT	HOLY SEE (VATICAN CITY STATE)
VCT	SAINT VINCENT AND THE GRENADINES
VEN	VENEZUELA
VGB	VIRGIN ISLANDS, BRITISH
VIR	VIRGIN ISLANDS, U.S.
VNM	VIET NAM
VUT	VANUATU
WLF	WALLIS AND FUTUNA
WSM	SAMOA
YEM	YEMEN

Value	Description
YUG	YUGOSLAVIA
ZAF	SOUTH AFRICA
ZMB	ZAMBIA
ZWE	ZIMBABWE

2.1.9.18 MSH-18 Character set (ID) 00692

Definition: This field contains the character set for the entire message. Refer to HL7 Table 0211 - Alternate character sets (see page 54) for valid values.

In Australian usage only "ASCII" must be used (unvalued implies "ASCII"). "UNICODE UTF-8" and "8859/1" messages should only be used by specific agreement.

The International standard allows repeats of this field, but this standard has constrained it to a single character set for the entire message.

HL7 Table 0211 - Alternate character sets

Value	Description	Comment
ASCII	The printable 7-bit ASCII character set.	(This is the default if this field is omitted)
8859/1	The printable characters from the ISO 8859/1 Character set	
~~8859/2~~	~~The printable characters from the ISO 8859/2 Character set~~	
~~8859/3~~	~~The printable characters from the ISO 8859/3 Character set~~	
~~8859/4~~	~~The printable characters from the ISO 8859/4 Character set~~	
~~8859/5~~	~~The printable characters from the ISO 8859/5 Character set~~	
~~8859/6~~	~~The printable characters from the ISO 8859/6 Character set~~	
~~8859/7~~	~~The printable characters from the ISO 8859/7 Character set~~	
~~8859/8~~	~~The printable characters from the ISO 8859/8 Character set~~	
~~8859/9~~	~~The printable characters from the ISO 8859/9 Character set~~	
~~ISO IR14~~	~~Code for Information Exchange (one byte)(JIS X 0201-1976). Note that the code contains a space,i.e. "ISO IR14".~~	
~~ISO IR87~~	~~Code for the Japanese Graphic Character set for information interchange (JIS X 0208-1990), Note that the code contains a space, i.e. "ISO IR87".~~	

Value	Description	Comment
~~ISO IR159~~	~~Code of the supplementary Japanese Graphic Character set for information interchange (JIS X 0212-1990). Note that the code contains a space, i.e. "ISO IR159".~~	
~~UNICODE~~	~~The world wide character standard from ISO/IEC 10646-1-19933~~	Deprecated in HL7v2.6. Retained for backward compatibility only as v 2.5. Replaced by specific Unicode encoding codes.
UNICODE UTF-8	†UCS Transformation Format, 8-bit form.	UTF-8 is a variable-length encoding, each code value is represented by 1,2 or 3 bytes, depending on the code value. 7 bit ASCII is a proper subset of UTF but not before and after the hyphen.

† "UNICODE UTF-8" was introduced in HL7v2.6 and has been back ported into this HL7v2.4 localisation to allow use of UTF-8 character encoding.

Note: The field separator character must still be chosen from the printable 7-bit ASCII character set.

The repetitions of this field to specify different character sets apply only to fields of the, FT, ST, and TX data types.

The field MSH-18-character set is an optional, repeating field of data type ID, using IDs outlined in HL7 Table 0211 - Alternate character sets (see page 54) (or equivalents from "ISO 2375").

- if the field is not valued, the default single-byte character set (ASCII ("ISO IR6")) should be assumed. No other character sets are allowed in the message.
- if the field repeats, but the first element is NULL (i.e., present but unvalued), the single-byte ASCII ("ISO IR6") is assumed as the default character set.
- if the sequence is present and the first element is specified, this character set is regarded as the default character set for the message. This must be a single-byte character set (i.e., "ISO IR6", "ISO IR13", "ISO IR14", "ISO IR100", etc.).
- elements in the remainder of the sequence (i.e., elements 2..n) are alternate character sets that may be used. These may include multi-byte character sets (i.e., JIS X 0208).
- the default character set should always be a single-byte character set. It should always have "ISO IR6" (ISO 646) or "ISO IR14" (JIS X 0201-1976) in the G0 area.

2.1.9.19 MSH-19 Principal language of message (CE) 00693

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the principal language of the message. Codes come from ISO 639.

Note: In the Australian context use "en" for English.

2.1.9.20 MSH-20 Alternate character set handling scheme (ID) 01317

Alternative Character Sets are not used in Australia and this field is null. The information below is what appears in the international standard.

Definition: When any alternative character sets are used (as specified in the second or later components of MSH-18 character sets), and if any special handling scheme is needed, this component is to specify the scheme used, according to HL7 Table 0356- Alternate character set handling scheme (see page 56) as defined below:

HL7 Table 0356 - Alternate character set handling scheme

Value	Description
~~ISO 2022-1994~~	~~This standard is titled "Information Technology - Character Code Structure and Extension Technique". This standard specifies an escape sequence from basic one byte character set to specified other character set, and vice versa. The escape sequence explicitly specifies what alternate character set to be evoked. Note that in this mode, the actual ASCII escape character is used as defined in the referenced ISO document. As noted in HL7 International Standard 1.6.1., escape sequences to/from alternate character set should occur within HL7 delimiters. In other words, HL7 delimiters are basic one byte characters only, and just before and just after delimiters, character encoding status should be the basic one byte set.~~
~~2.3~~	~~The character set switching mode specified in HL7 2.3, HL7 International Standard sections 2.8.28.6.1, and 2.9.2. Note that the escape sequences used in this mode do not use the ASCII "esc" character. They are "HL7 escape sequences" as defined in HL7 2.3, sec. 2.9 as defined in ISO 2022-1994 (Also, note that HL7 International Standard sections 2.8.28.6.1and 2.9.2 in HL7 2.3 correspond to HL7 International Standard sections 2.8.31.6.1and 2.9.2 in HL7 2.4.)~~
<null>	This is the default, indicating that there is no character set switching occurring in this message.

2.1.9.21 MSH-21 Conformance statement ID (ID) 01598

Definition: Sites may use this field to assert adherence to a Conformance Statement published by HL7 or by a site. Conformance Statements contain detailed explanations of grammar, syntax, and usage for a particular message or set of messages. Examples of the use of Conformance Statements appear in HL7 International Standard Chapter 5, "Query."

Repetition of this field allows more flexibility in creating and naming conformance statements. For example, the first repetition could reference a standard conformance statement, and the second, just some changes to it.

Values for HL7-standard conformance statements appear in HL7 Table 0449 - Conformance statements (see page 56) as defined below.

HL7 Table 0449 - Conformance statements

Value	Description
HL7AUSD-STD-OO-ADRM-2021.1[8]	Australian Diagnostics and Referral Messaging Localisation of HL7 Version 2.4 (2021.1)
HL7AUSD-STD-OO-ADRM-2018.1[9]	Australian Diagnostics and Referral Messaging Localisation of HL7 Version 2.4 (2018.1)
HL7AUSD-STD-OO-ADRM-2017.1[10]	Australian Pathology Messaging Localisation of HL7 Version 2.4 Standard (2017.1)
	Values here are by site negotiation.

Note: As HL7 technical committees ballot conformance statements, table 449 will be populated with their identifiers. No identifiers have been issued as of v 2.4. As with any HL7 table, this table may be extended with site-defined identifiers.

The sender should specify in this field the appropriate version of this specification that the message is compliant with. This field may become a requirement in future versions.

2.1.9.27 MSH-27 Security Handling Instructions (CWE) 2430

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST)>

Definition: This field is repeatable and conveys instructions to users and receivers for secure distribution, transmission, and storage; dictate obligations or mandated actions; specify any action prohibited by refrain policy such as dissemination controls; and stipulate the permissible purpose of use of an IT resource.

This field is pre-adopted from HL7 International v2.9.

In addition to the above definition, in the context of messages that will be submitted to a repository where they will be accessed subsequently by an unknown party using a retrieval token such as printed on a barcode, then that retrieval token can be stored in the Identifier <ST> component while the Name of Coding System <IS> must indicate the scheme for the retrieval repository.

2.2 Other segments used in pathology messaging

This section covers the following segments that are often included in pathology messaging. Important order and observation segments are not included here, but are covered in detail in Chapters 4 and 5 of this guide.

Quick links:

- 2.2.1 PID - patient identification segment (see page 58)
- 2.2.2 PV1 - patient visit segment (see page 72)
- 2.2.3 PV2- patient visit - additional information segment (see page 94)
- 2.2.4 AL1 - Patient allergy information segment (see page 107)

8 https://confluence.hl7australia.com/display/OOADRM20211
9 https://confluence.hl7australia.com/display/OOADRM20181
10 https://confluence.hl7australia.com/display/APM24

2.2.1 PID - patient identification segment

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

It should be noted that from V2.4 onwards the demographics of animals can also be sent in the PID segment (see PID-35 to PID-38).

The assigning authority, the fourth component of the patient identifiers, is a HD data type that is uniquely associated with the assigning authority that originally assigned the number. A given institution, or group of intercommunicating institutions, should establish a list of assigning authorities that may be potential assignors of patient identification (and other important identification) numbers. The list will be one of the institution's master dictionary lists. Since third parties (other than the assignors of patient identification numbers) may send or receive HL7 messages containing patient identification numbers, the assigning authority in the patient identification numbers may not be the same as the sending and receiving systems identified in the MSH. The assigning authority must be unique across applications at a given site. This field is required in HL7 implementations that have more than a single Patient Administration application assigning such numbers. The assigning authority and identifier type codes are strongly recommended for all CX data types.

With HL7 V2.3, the nomenclature for the fourth component of the patient identifiers was changed from "assigning facility ID" to "assigning authority". While the identifier may be unique to a given healthcare facility (for example, a medical record assigned by facility A in Hospital XYZ), the identifier might also be assigned at a system level (for example a corporate person index or enterprise number spanning multiple facilities) or by a government entity, for example a nationally assigned unique individual identifier. While a facility is usually an assigning authority, not all assigning authorities are facilities. Therefore, the fourth component is referred to as an assigning authority, but retains backward compatibility using the construct of the HD data type (see the note in section 2.8.18). Additionally, CX data types support the use of assigning facility (HD) as the sixth component.

HL7 Attribute Table – PID – Patient identification

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	R †††			00104	Set ID - PID
2	20	CX	B			00105	Patient ID
3	250	CX	R	Y		00106	Patient Identifier List
4	20	CX	B	Y		00107	Alternate Patient ID - PID
5	250	XPN	R	Y		00108	Patient Name
6	250	XPN	O	†		00109	Mother's Maiden Name

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
7	26	TS	O			00110	Date/Time of Birth
8	1	IS	O		0001 (see page 64)	00111	Administrative Sex
9	250	XPN	B	Y		00112	Patient Alias
10	250	CE	O	†	0005	00113	Race
11	250	XAD	O	Y		00114	Patient Address
12	4	IS	B		0289 (see page 187)	00115	County Code
13	250	XTN	O	Y		00116	Phone Number - Home
14	250	XTN	O	Y		00117	Phone Number - Business
15	250	CE	O		0296 (see page 66)	00118	Primary Language
16	250	CE	O		0002 (see page 66)	00119	Marital Status
17	250	CE	O		0006	00120	Religion
18	250	CX	O			00121	Patient Account Number
19	16	ST	B			00122	SSN Number - Patient
20	25	DLN	O			00123	Driver's License Number - Patient
21	250	CX	O	Y		00124	Mother's Identifier
22††	250	CE	O	Y	0189	00125	Ethnic Group
23	250	ST	O			00126	Birth Place

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
24‡	1	ID	O		0136 (see page 415)	00127	Multiple Birth Indicator
25	2	NM	O			00128	Birth Order
26	250	CE	O	Y	0171 (see page 69)	00129	Citizenship
27φ	250	CE	O		0172	00130	Veterans Military Status
28	250	CE	B		0212	00739	Nationality
29	26	TS	O			00740	Patient Death Date and Time
30	1	ID	O		0136 (see page 415)	00741	Patient Death Indicator
31	1	ID	O		0136 (see page 415)	01535	Identity Unknown Indicator
32	20	IS	O	Y	0445 (see page 70)	01536	Identity Reliability Code
33	26	TS	O			01537	Last Update Date/Time
34	40	HD	O			01538	Last Update Facility
35	250	CE	C		0446 (see page 71)	01539	Species Code
36	250	CE	C		0447 (see page 71)	01540	Breed Code
37	80	ST	O			01541	Strain

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
38	250	CE	O	2	0429 (see page 72)	01542	Production Class Code

† PID-6 and PID-10: component repeatability has been removed in the Australian context. Variance to HL7 International.

†† PID-22: Not to be used for indigenous status or country of birth in Australia. Variance to HL7 International.

‡ PID-24: HL7 table 0136 has options of 'Yes/No', whereas METeOR 668881[11] is the number of live births arising from a single pregnancy. Use HL7 Table 0136.

φ PID-27: DVA file number is sent in PID-3.1. The DVA card colour is no longer sent in this field (refer to PID-3.5). Variance to HL7 International.

††† PID-1 is mandatory in the Australian context. Variance to HL7 International.

2.2.1.0 PID field definition

2.2.1.1 PID-1 Set ID PID (SI) 00104

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

2.2.1.2 PID-2 Patient ID (CX) 00105

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: **This field has been retained for backward compatibility only.** The arbitrary term of "external ID" has been removed from the name of this field. The repetition, assigning authority, healthcare facility, and identifier type code attributes of PID-3 - patient identifier list allow for distinctive identifier representation. This field remains for systems with a negotiated understanding of "external." It is recommended to use PID-3 - patient identifier list for all patient identifiers.

When used for backward compatibility, this field is valued when the patient is from another institution, outside office, etc., and the identifier used by that institution can be shown in this field. This may be a number that multiple disparate corporations or facilities share. Refer to HL7 Table 0061 - Check digit scheme (see page 190).

2.2.1.3 PID-3 Patient identifier list (CX) 00106

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

11 http://meteor.aihw.gov.au/content/index.phtml/itemId/668881

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the list of identifiers (one or more) used by the healthcare facility to uniquely identify a patient (e.g., medical record number, billing number, birth registry, national unique individual identifier, etc.). The Australian individual healthcare identifier (IHI) should be sent in this field. Refer to HL7 Table 0061 - Check digit scheme (see page 190) for valid values. The arbitrary term of "internal ID" has been removed from the name of this field for clarity. Refer also to HL7 Table 0203 - Identifier Type (see page 301) and User-defined Table 0363 - Assigning authority (see page 310) for valid values.

Only the sender's identifier(s) and the receiver's identifier(s) should be transmitted to avoid inappropriate use and disclosure of patient information. Other organizations' identifiers should not be used by organisations or providers as their own identifiers. The *Privacy Act 1998* (commonwealth) has the relevant state and territory legislation regarding person identifiers.

Patient identifiers are not always unique.

2.2.1.4 PID-4 Alternate patient ID - PID (CX) 00107

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: **This field has been retained for backward compatibility only.** It is recommended to use PID-3 - patient identifier list for all patient identifiers. When used for backward compatibility, this field contains the alternate, temporary, or pending optional patient identifier to be used if needed - or additional numbers that may be required to identify a patient. This field may be used to convey multiple patient IDs when more than one exist for a patient. Possible contents might include a visit number, a visit date, or a Social Security Number.

2.2.1.5 PID-5 Patient name (XPN) 00108

Components: In Version 2.3, replaces the PN data type. <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) > ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ <name assembly order (ID)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Definition: This field contains the names of the patient, the primary or legal name of the patient is reported first. Therefore, the name type code in this field should be "L - Legal". Refer to HL7 Table 0200 - Name type (see page 62) for valid values. Repetition of this field is allowed for representing the same name in different character sets. Note that "last name prefix" is synonymous to "own family name prefix" of previous versions of HL7, as is "second and further given names or initials thereof" to "middle initial or name". Multiple given names and/or initials are separated by spaces.

HL7 Table 0200 - Name type

Value	Description
A	Alias Name
B	Name at Birth

Value	Description
C	Adopted Name
D	Display Name
I	Licensing Name
L	Legal Name
M	Maiden Name
N	Nickname /"Call me" Name/Street Name
P	Name of Partner/Spouse (retained for backward compatibility only)
R	Registered Name (animals only)
S	Coded Pseudo-Name to ensure anonymity
T	Indigenous/Tribal/Community Name
U	Unspecified

For animals, if a Name Type of "R" is used, use "Name Context" to identify the authority with which the animal's name is registered.

2.2.1.6 PID-6 Mother's maiden name (XPN) 00109

Components: In Version 2.3, replaces the PN data type. <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) > ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ <name assembly order (ID)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Definition: This field contains the family name under which the mother was born (i.e., before marriage). It is used to distinguish between patients with the same last name.

2.2.1.7 PID-7 Date/time of birth (TS) 00110

Definition: This field contains the patient's date and time of birth.

This field allows for variable precision of the date/time of birth. Refer to 3.26 TS - time stamp (see page 183) for details how to encode date/time in this field.

Refer to METeOR 287007[12], 'Date of birth' and AS 4846-2014[13] Clause 5.2.3 'Date of Birth Accuracy Indicator', Clause 5.2.2 'Date of Birth'.

12 http://meteor.aihw.gov.au/content/index.phtml/itemId/287007
13 https://infostore.saiglobal.com/en-au/Standards/AS-4846-2014-1753860/

2.2.1.8 PID-8 Administrative sex (IS) 00111

Definition: This field contains the patient's sex.

HL7 code values (User-defined Table 0001 - Administrative sex) need to be used for messages whereas METeOR values are required for data collection and statistics. The following mapping should be used:

User-defined Table 0001 Administrative sex		**METeOR (**287316[14]**Sex)**	
Code	Description	Code	Description
M	Male	1	Male
F	Female	2	Female
A	Ambiguous	3	Indeterminate or Intersex
O	Other	9	Not stated/Inadequately described
U	Unknown	9	Not stated/Inadequately described
N	Not Applicable	9	Not stated/Inadequately described

Also refer to AS 4846-2014[15] Clause 5.5 'Sex'.

2.2.1.9 PID-9 Patient alias (XPN) 00112

Components: In Version 2.3, replaces the PN data type. <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) > ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ <name assembly order (ID)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Definition: **This field has been retained for backward compatibility only.** It is recommended to use PID-5 - patient name for all patient names. This field contained the name(s) by which the patient has been known at some time. Refer to HL7 Table 0200 - Name type (see page 62) for valid values.

2.2.1.10 PID-10 Race (CE) 00113

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This element is used for Indigenous status - refer to METeOR 602543[16] 'Indigenous status'. The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

Note: In the Australian context the component repeatability has been removed. A variance to HL7 International.

14 http://meteor.aihw.gov.au/content/index.phtml/itemId/287316
15 https://infostore.saiglobal.com/en-au/Standards/AS-4846-2014-1753860/
16 http://meteor.aihw.gov.au/content/index.phtml/itemId/602543

2.2.1.11 PID-11 Patient address (XAD) 00114

Components: In Version 2.3 and later, replaces the AD data type. <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)> ^ <address validity range (DR)>

Subcomponents of street address: <street address (ST)> & <street name (ST)> & <dwelling number (ST)>

Definition: This field contains the mailing address of the patient. Address type codes are defined by HL7 Table 0190 - Address type (see page 65). Multiple addresses for the same person may be sent in the following sequence: The primary mailing address must be sent first in the sequence (for backward compatibility); if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence.

HL7 Table 0190 - Address Type

Example field: PID-11 Patient address

Value	Description
C	Current address
H	Home address
M	Mailing address

Refer to AS 4846-2014[17] Clause 6.

2.2.1.12 PID-12 County code (IS) 00115

Definition: **This field has been retained for backward compatibility.** This field contains the patient's county code. The county can now be supported in the county/parish code component of the XAD data type (PID-11 - Patient Address). Refer to User-defined Table 0289 - County/parish (see page 187) for suggested values

2.2.1.13 PID-13 Phone number - home (XTN) 00116

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <e-mail address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the patient's personal phone numbers. All personal phone numbers for the patient are sent in the following sequence. The first sequence is considered the primary number (for backward compatibility). If the primary number is not sent, then a repeat delimiter is sent in the first sequence. Refer to HL7 Table 0201 - Telecommunication use code (see page 199) and HL7 Table 0202 - Telecommunication equipment type (see page 199) for valid values.

Refer to AS 4846-2014[18] Clause 7 *Electronic Address Group*.

17 https://infostore.saiglobal.com/en-au/Standards/AS-4846-2014-1753860/
18 https://infostore.saiglobal.com/en-au/Standards/AS-4846-2014-1753860/

2.2.1.14 PID-14 Phone number - business (XTN) 00117

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <e-mail address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the patient's business telephone numbers. All business numbers for the patient are sent in the following sequence. The first sequence is considered the patient's primary business phone number (for backward compatibility). If the primary business phone number is not sent, then a repeat delimiter must be sent in the first sequence. Refer to HL7 Table 0201 - Telecommunication use code (see page 199) and HL7 Table 0202 - Telecommunication equipment type (see page 199) for valid values.

Refer to AS 4846-2014 Clause 7 *Electronic Address Group*.

2.2.1.15 PID-15 Primary language (CE) 00118

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the patient's primary language. HL7 recommends using ISO table 639 as the suggested values in User-defined Table 0296 - Primary Language (see page 66).

User-defined Table 0296 - Primary language

Value	Description
	No suggested values defined

Refer to METeOR 659407[19], 'Preferred language'.

2.2.1.16 PID-16 Marital status (CE) 00119

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the patient's marital (civil) status.

Refer to User-defined Table 0002 - Marital status (see page 66) for the HL7 values that are to be used in this data field.

If METeOR values are required for data collection or statistical purposes, the values should be mapped using the following mapping:

HL7 Table 0002			METeOR (291045[20]'Martial Status')
S	Single	1	Never married
W	Widowed	2	Widowed
D	Divorced	3	Divorced

19 http://meteor.aihw.gov.au/content/index.phtml/itemId/659407
20 http://meteor.aihw.gov.au/content/index.phtml/itemId/291045

HL7 Table 0002			METeOR (291045[21]'Martial Status')
A	Separated	4	Separated
M	Married	5	Married (incl. defacto)
U	Unknown	6	Not stated/Inadequately described

2.2.1.17 PID-17 Religion (CE) 00120

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the patient's religion, for example, Baptist, Catholic, Methodist, etc. Refer to User-defined Table 0006 - Religion for suggested values.

2.2.1.18 PID-18 Patient account number (CX) 00121

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the patient account number assigned by accounting to which all charges, payments, etc., are recorded. It is used to identify the patient's account. Refer to HL7 Table 0061 - Check digit scheme (see page 190) for valid values.

Note: If an account number is used for patient identification, report in PID-3 with a patient identifier type code of 'AN'.

2.2.1.19 PID-19 SSN number patient (ST) 00122

Definition: This field has been retained for backward compatibility only. It is recommended to use PID-3 - Patient Identifier List for all patient identifiers. However, in order to maintain backward compatibility, this field should also be populated. When used for backward compatibility, this field contains the patient's social security number. This number may also be a RR retirement number.

2.2.1.20 PID-20 Driver's license number - Patient (DLN) 00123

Components: <license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)>

Definition: This field contains the patient's driver's license number. Some sites may use this number as a unique identifier of the patient. The default of the second component is the state in which the patient's license is registered.

Note: In the Australian context this field has been superseded; hence use PID-3 Patient Identifier List.

21 http://meteor.aihw.gov.au/content/index.phtml/itemId/291045

2.2.1.21 PID-21 Mother's identifier (CX) 00124

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is used, for example, as a link field for newborns. Typically a patient ID or account number may be used. This field can contain multiple identifiers for the same mother. Refer to HL7 Table 0061 - Check digit scheme for valid values.

2.2.1.22 PID-22 Ethnic group (CE) 00125

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field further defines the patient’s ancestry.

Note: In the Australian context, this field is retained for backwards compatibility and hence is a variance to HL7 International. In the Australian context this field is not to be used for indigenous status or country of birth - refer to PID-10.

2.2.1.23 PID-23 Birth place (ST) 00126

Definition: This field indicates the location of the patient’s birth, for example "St. Francis Community Hospital of Lower South Side". The actual address is reported in PID-11 with an identifier of "N".

Note: In the Australian context this field is used for the patient's country of birth. Refer to METeOR 659454[22] 'Country of birth' and AS 4846-2014 Clause 5.8.4 'Country of birth'.

2.2.1.24 PID-24 Multiple birth indicator (ID) 00127

Definition: This field indicates whether the patient was part of a multiple birth. Refer to HL7 Table 0136 - Yes/No Indicator for valid values.

In the Australian context METeOR 482409 Birth plurality indicates the total number of births from a single pregnancy.

Note: Note that HL7 table 0136 is a 'Yes/No' valued table, where as METeOR 668881[23] 'Birth Plurality' is the number of live births resulting from a single pregnancy. Use HL7 table 0136.

2.2.1.25 PID-25 Birth order (NM) 00128

Definition: When a patient was part of a multiple birth, a value (number) indicating the patient’s birth order is entered in this field.

Refer to METeOR 669962[24] 'Birth order' and AS 4846-2014 Clause 5.3.2.

(see page 21)

22 http://meteor.aihw.gov.au/content/index.phtml/itemId/659454
23 http://meteor.aihw.gov.au/content/index.phtml/itemId/668881
24 http://meteor.aihw.gov.au/content/index.phtml/itemId/669962

2.2.1.26 PID-26 Citizenship (CE) 00129

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the patient's country of citizenship. HL7 recommends using ISO table 3166 as the suggested values in User-defined Table 0171 - Citizenship (see page 69).

In the Netherlands, this field is used for "Nationaliteit".

User-defined Table 0171 - Citizenship

Value	Description
No suggested values defined	

2.2.1.27 PID-27 Veterans military status (CE) 00130

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>
Definition: This field contains the military status assigned to a veteran. Note: In the Australian context DVA file number is sent in PID-3.1 and the DVA card colour is no longer sent in this field (PID-3.5).

2.2.1.28 PID-28 Nationality (CE) 00739

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: **From V2.4 onward, this field has been retained for backward compatibility only. It is recommended to refer to *PID-10 - Race*, *PID-22 - Ethnic group* and *PID-26 - Citizenship*.** This field contains a code that identifies the nation or national grouping to which the person belongs. This information may be different from a person's citizenship in countries in which multiple nationalities are recognized (for example, Spain: Basque, Catalan, etc.).

2.2.1.29 PID-29 Patient death date and time (TS) 00740

Definition: This field contains the date and time at which the patient death occurred.

Refer to AS 4846-2014[25] Clause 5.4.2 '*Date of Death*' and Clause 5.4.3 '*Date of Death Accuracy Indicator*'. Note: HL7 V2.4 does not accommodate AS 4846-2014 Clause 5.4.4 *'Source of Death Notification*'.

2.2.1.30 PID-30 Patient death indicator (ID) 00741

Definition: This field indicates whether the patient is deceased. Suggested valid values:

Y the patient is deceased

N the patient is not deceased

25 https://infostore.saiglobal.com/en-au/Standards/AS-4846-2014-1753860/

2.2.1.31 PID-31 Identity unknown indicator (ID) 01535

Definition: This field indicates whether or not the patient's/person's identity is known. Suggested valid values:

Y the patient's/person's identity is unknown

N the patient's/person's identity is known

2.2.1.32 PID-32 Identity reliability code (IS) 01536

Definition: This field contains a coded value used to communicate information regarding the reliability of patient/person identifying data transmitted via a transaction. Values could indicate that certain fields on a PID segment for a given patient/person are known to be false (e.g., use of default or system-generated values for Date of Birth or Social Security Number. Refer to User-defined Table 0445 - Identity reliability code (see page 70) for suggested values.

User-defined Table 0445 - Identity Reliability Code (see page 21)

Value	Description
US	Unknown/Default Social Security Number
UD	Unknown/Default Date of Birth
UA	Unknown/Default Address
AL	Patient/Person Name is an Alias

2.2.1.33 PID-33 Last update date/time (TS) 01537

Definition: This field contains the last update date and time for the patient's/person's identifying and demographic data, as defined in the PID segment. Receiving systems will use this field to determine how to apply the transaction to their systems. If the receiving system (such as an enterprise master patient index) already has a record for the person with a later last update date/time, then the EMPI could decide not to apply the patient's/person's demographic and identifying data from this transaction.

2.2.1.34 PID-34 Last update facility (HD) 01538

Definition: This field identifies the facility of the last update to a patient's/person's identifying and demographic data, as defined in the PID segment. Receiving systems or users will use this field to determine how to apply the transaction to their systems. If the receiving system (such as a hospital's patient management system) already has a record for the patient/person, then it may decide to only update its data if the source is a "trusted" source. A hospital might consider other hospitals trusted sources, but not "trust" updates from non-acute care facilities. For example:

...|Metro Hospital|...

2.2.1.35 PID-35 Species code (CE) 01539

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: The species of living organism. This may include the common or scientific name, based on the coding system(s) used. SNOMED is the recommended coding system. If this field is not valued, a human is assumed. Refer to User-defined Table 0446 - Species Code (see page 71) for suggested values.

User-defined Table 0446 - Species Code

Value	Description
	No suggested values defined

Conditionality Rule: This field must be valued if PID-36 - Breed Code or PID-38 - Production Class Code is valued.

For example:

...|L-80700^Canine, NOS^SNM3|...
...|L-80100^Bovine^SNM3|...
...|L-80A00^Feline^SNM3|...

2.2.1.36 PID-36 Breed code (CE) 01540

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: The specific breed of animal. This field, unlike Species and Strain is specific to animals and cannot be generally used for all living organisms. SNOMED is the recommended coding system. Refer to User-defined Table 0447 - Breed Code (see page 71) for suggested values.

User-defined Table 0447 - Breed Code

Value	Description
	No suggested values defined

Conditionality Rule: This field must be valued if PID-37 - Strain is valued.

For example, (showing primary and alternative coding systems, using locally defined "American Kennel Club" nomenclature):

...|L-80733^ Staffordshire bull terrier^SNM3^^American Staffordshire Terrier^99AKC|...
...|L-80900^Weimaraner^SNM3|...
...|L-80439^Peruvian Paso Horse^SNM3|...

2.2.1.37 PID-37 Strain (ST) 01541

Definition: This field contains the specific strain of animal. It can also be expanded to include strain of any living organism and is not restricted to animals.

Example:
...|DeKalb|...

...|Balb/c|...
...|DXL|...

2.2.1.38 PID-38 Production class code (CE) 01542

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the code and/or text indicating the primary use for which the living subject was bred or grown. Refer to User-defined Table 0429 - Production Class Code (see page 72) for suggested values. For example:

...|DA^Dairy^L|...
...|MT^Meat^L|...
...|RA^Racing^L|...

User-defined Table 0429 - Production class Code

Value	Description
BR	Breeding/genetic stock
DA	Dairy
DR	Draft
DU	Dual Purpose
LY	Layer, Includes Multiplier flocks
MT	Meat
OT	Other
PL	Pleasure
RA	Racing
SH	Show
NA	Not Applicable
U	Unknown

2.2.2 PV1 - patient visit segment

The PV1 segment is used by Registration/Patient Administration applications to communicate information on an account or visit-specific basis. The default is to send account level data. To use this segment for visit level data *PV1-51 - visit indicator* must be valued to "V". The value of PV-51 affects the level of data being sent on the PV1, PV2, and any other segments that are part of the associated PV1 hierarchy (e.g. ROL, DG1, or OBX).

The facility ID, the optional fourth component of each patient location field, is a HD data type that is uniquely associated with the healthcare facility containing the location. A given institution, or group of intercommunicating institutions, should establish a list of facilities that may be potential assignors of patient locations. The list will be one of the institution's master dictionary lists. Since third parties other than the assignors of patient locations may send or receive HL7 messages containing patient locations, the facility ID in the patient location may not be the same as that implied by the sending and receiving systems identified in the MSH. The facility ID must be unique across facilities at a given site. This field is required for HL7 implementations that have more than a single healthcare facility with bed locations, since the same <point of care> ^ <room> ^ <bed> combination may exist at more than one facility.

HL7 Attribute Table - PV1 – Patient visit

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R ††††			00131	Set ID - PV1
2	1	IS	R		0004 (see page 76)	00132	Patient Class
3	80	PL	O			00133	Assigned Patient Location
4	2	IS	O		0007 (see page 77)	00134	Admission Type
5	250	CX	O			00135	Preadmit Number
6	80	PL	O			00136	Prior Patient Location
7	250	XCN	O	Y	0010 (see page 79)	00137	Attending Doctor
8	250	XCN	O	Y	0010 (see page 79)	00138	Referring Doctor
9	250	XCN	C†† †	Y	0010 (see page 79)	00139	Consulting Doctor (only first repeat is used in routing)
10	10†	IS	C‡		0069 (see page 80)	00140	Hospital Service
11	80	PL	O			00141	Temporary Location
12	2	IS	O		0087 (see page 80)	00142	Preadmit Test Indicator
13	2	IS	O		0092 (see page 81)	00143	Re-admission Indicator

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
14	6	IS	O		0023 (see page 81)	00144	Admit Source
15	2	IS	O	Y	0009 (see page 82)	00145	Ambulatory Status
16	2	IS	O		0099 (see page 82)	00146	VIP Indicator
17	250	XCN	O	Y	0010 (see page 79)	00147	Admitting Doctor
18	2	IS	O		0018 (see page 84)	00148	Patient Type
19	250	CX	O			00149	Visit Number
20	50	FC	O	Y	0064 (see page 84)	00150	Financial Class
21	13 ††	IS	O		0032 (see page 85)	00151	Charge Price Indicator
22	2	IS	O		0045 (see page 86)	00152	Courtesy Code
23	2	IS	O		0046 (see page 86)	00153	Credit Rating
24	2	IS	O	Y	0044 (see page 86)	00154	Contract Code
25	8	DT	O	Y		00155	Contract Effective Date
26	12	NM	O	Y		00156	Contract Amount
27	3	NM	O	Y		00157	Contract Period
28	2	IS	O		0073 (see page 88)	00158	Interest Code
29	1	IS	O		0110 (see page 88)	00159	Transfer to Bad Debt Code
30	8	DT	O			00160	Transfer to Bad Debt Date
31	10	IS	O		0021 (see page 88)	00161	Bad Debt Agency Code
32	12	NM	O			00162	Bad Debt Transfer Amount

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
33	12	NM	O			00163	Bad Debt Recovery Amount
34	1	IS	O		0111 (see page 89)	00164	Delete Account Indicator
35	8	DT	O			00165	Delete Account Date
36	3	IS	O		0112 (see page 89)	00166	Discharge Disposition
37	25	CM	O		0113 (see page 90)	00167	Discharged to Location
38	250	CE	O		0114 (see page 90)	00168	Diet Type
39	2	IS	O		0115 (see page 91)	00169	Servicing Facility
40	1	IS	B		0116 (see page 91)	00170	Bed Status
41	2	IS	O		0117 (see page 92)	00171	Account Status
42	80	PL	O			00172	Pending Location
43	80	PL	O			00173	Prior Temporary Location
44	26	TS	O			00174	Admit Date/Time
45	26	TS	O	Y		00175	Discharge Date/Time
46	12	NM	O			00176	Current Patient Balance
47	12	NM	O			00177	Total Charges
48	12	NM	O			00178	Total Adjustments
49	12	NM	O			00179	Total Payments
50	250	CX	O		0203 (see page 301)	00180	Alternate Visit ID
51	1	IS	O		0326 (see page 93)	01226	Visit Indicator
52	250	XCN	B	Y	0010 (see page 79)	01274	Other Healthcare Provider

† Australian variation to HL7 V2.4 with the length changed from 3 to 10 characters.

‡ The 'O' optionality code in HL7 V2.4 is a typographical error and the optionality should be 'C'.

†† Australian variation to HL7 V2.4 with the length changed from 2 to 13 characters to incorporate rules defined in HL7 Clause 5.4.1.

††† Australian variation to HL7 2.4. Changed to conditional as first repeat is used to identify target of the message for routing purposes. Field is required for addressing when messages are to be sent by a messaging service. Field is optional when message is used internally.

†††† PV1-1 is required in the Australian context. Variance to HL7 International.

2.2.2.0 PV1 field definitions

2.2.2.1 PV1-1 Set ID - PV1 (SI) 00131

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

2.2.2.2 PV1-2 Patient class (IS) 00132

Definition: This field is used by systems to categorize patients by site. It does not have a consistent industry-wide definition. It is subject to site-specific variations. Refer to User-defined Table 0004 - Patient class (see page 76) for suggested values.

User-defined Table 0004 - Patient class

Value	Description
E	Emergency
I	Inpatient
O	Outpatient
P	Preadmit
S†	Same day patient
Y†	Community client
R	Recurring patient
B	Obstetrics
C	Commercial Account
N	Not Applicable
U	Unknown

Note: Patients from private surgeries are outpatients.

Note: † - "S" and "Y" are Australian additions and a variation to HL7 International.

"Commercial Account" is used by reference labs for specimen processing when the service is billed back to a third party. A registration is processed for the specimen to facilitate the subsequent billing. The identity of the patient may be known or unknown. In either case, for billing and statistical purposes, the patient class is considered a commercial account due to the third party billing responsibility. "Not Applicable" is used only in cases where the PV1 segment itself is not applicable but is retained in the message definitions for backwards compatibility (for example when a managed care system sends A28,A29, or A31 messages to indicate the enrolment of a patient in the system and there is no scheduled "visit" or "encounter" and hence the entire PV1 segment is not applicable).

For further information on:

- Admitted patient (I and S) refer to METeOR 268957[26].
- Non-admitted patient refer to METeOR 268973[27].
- Same-day admitted care refer to METeOR 373961[28].
- Overnight-stay admitted refer to METeOR 374147[29].
- Non-admitted patient service event—care type refer to METeOR 679528[30].

2.2.2.3 PV1-3 Assigned patient location (PL) 00133

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status(IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the patient's initial assigned location or the location to which the patient is being moved. The first component may be the nursing station for inpatient locations, or clinic or department, for locations other than inpatient. For cancelling a transaction or discharging a patient, the current location (after the cancellation event or before the discharge event) should be in this field. If a value exists in the fifth component (location status), it supersedes the value in PV1-40 - Bed Status.

2.2.2.4 PV1-4 Admission type (IS) 00134

Definition: This field indicates the circumstances under which the patient was or will be admitted. Refer to User-defined Table 0007 - Admission type for suggested values. In the US, it is recommended to report the UB92 FL 19 "Type of Admission" in this field.

User-defined Table 0007 - Admission type

Value	Description
A	Accident
C	Elective
E	Emergency
G	Geriatric respite admission
L	Labor and Delivery

26 http://meteor.aihw.gov.au/content/index.phtml/itemId/268957
27 http://meteor.aihw.gov.au/content/index.phtml/itemId/268973
28 http://meteor.aihw.gov.au/content/index.phtml/itemId/373961
29 http://meteor.aihw.gov.au/content/index.phtml/itemId/374147
30 http://meteor.aihw.gov.au/content/index.phtml/itemId/679528

Value	Description
N	Newborn (Birth in healthcare facility)
R	Routine
S	Statistical admission
U	Urgent

Note: G and S are Australian additions.

2.2.2.5 PV1-5 Preadmit number (CX) 00135

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)>^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD)^ <effective date (DT)> ^ <expiration date (DT)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type(ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type(ID)>

Definition: This field uniquely identifies the patient's pre-admit account. Some systems will continue to use the pre-admit number as the billing number after the patient has been admitted. For backward compatibility, a ST data type can be sent; however HL7 recommends use of the CX data type, like the account number, for new implementations. The assigning authority and identifier type code are strongly recommended for all CX data types.

2.2.2.6 PV1-6 Prior patient location (PL) 00136

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status(IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the prior patient location if the patient is being transferred. The old location is null if the patient is new. If a value exists in the fifth component (location status), it supersedes the value in PV1-40 - bed status.

2.2.2.7 PV1-7 Attending doctor (XCN) 00137

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^<name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the attending physician information. Multiple names and identifiers for the same physician may be sent. The field sequences are not used to indicate multiple attending doctors. The legal name must be sent in the first sequence. If the legal name is not sent, then a repeat delimiter must be sent in the first

sequence. Depending on local agreements, either ID or the name may be absent in this field. Refer to User-defined Table 0010 - Physician ID (see page 79) for suggested values.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

User-defined Table 0010 - Physician ID

Value	Description
	No suggested values defined

Note: In the Australian context this field should not be used unless the system caters for registrars or residents.

2.2.2.8 PV1-8 Referring doctor (XCN) 00138

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the referring physician information. Multiple names and identifiers for the same physician may be sent. The field sequences are not used to indicate multiple referring doctors. The legal name must be sent in the first sequence. If the legal name is not sent, then a repeat delimiter must be sent in the first sequence. Depending on local agreements, either the ID or the name may be absent from this field. Refer to User-defined Table 0010 - Physician ID (see page 79) for suggested values.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

2.2.2.9 PV1-9 Consulting doctor (XCN) 00139

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

In the Australian setting for ORU messaging, the first repeat of this field is used to identify the target provider for each message. A location specific ID of the target provider for this message must be placed in the first repeat and will be unique for each instance of messages to be routed. Where available the Medicare provider number is used as this provides for a location specific identifier.

The consulting doctors can be specified in the second or following repeats of this field.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

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2.2.2.10 PV1-10 Hospital service (IS) 00140

Definition: This field contains the treatment or type of surgery that the patient is scheduled to receive. It is a required field with trigger events A01 (admit/visit notification), A02 (transfer a patient), A14 (pending admit), A15 (pending transfer). Refer to User-defined Table 0069 - Hospital service (see page 80) for suggested values.

User-defined Table 0069 - Hospital service

Values	Description
MED	Medical Service
SUR	Surgical Service
URO	Urology Service
PUL	Pulmonary Service
CAR	Cardiac Service

Note:

- Australian variation to HL7 V2.4 with the length changed from 3 to 10 characters.
- The 'O' optionality code in HL7 V2.4 is a typographical error and the optionality should be 'C'.
- In the Australian context this field is required for trigger events A01, A02, A05, A14 and A15.

2.2.2.11 PV1-11 Temporary location (PL) 00141

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a location other than the assigned location required for a temporary period of time (e.g., OR, operating theatre, etc.). If a value exists in the fifth component (location status), it supersedes the value in PV1-40 - bed status.

2.2.2.12 PV1-12 Preadmit test indicator (IS) 00142

Definition: This field indicates whether the patient must have pre-admission testing done in order to be admitted. Refer to User-defined Table 0087 - Pre-admit test indicator (see page 80) for suggested values.

User-defined Table 0087 - Pre-admit test indicator

Value	Description
	No suggested values defined

2.2.2.13 PV1-13 Re-admission indicator (IS) 00143

Definition: This field indicates that a patient is being re-admitted to the healthcare facility and gives the circumstances. We suggest using "R" for readmission or else null. Refer to User-defined Table 0092 - Re-admission indicator (see page 81) for suggested values.

User-defined Table 0092 - Re-admission indicator

Value	Description
R	Re-admission

2.2.2.14 PV1-14 Admit source (IS) 00144

Definition: This field indicates where the patient was admitted. Refer to User-defined Table 0023 - Admit source (see page 81) for suggested values. In the US, this field is used on UB92 FL20 "Source of Admission".

The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

Note: The official title of UB is "National Uniform Billing Data Element Specifications." Most of the codes added came from the UB-92 specification, but some came from the UB-82.

User-defined Table 0023 - Admit source

Value	Description
1	Physician referral
2	Clinic referral
3	HMO referral
4	Transfer from a hospital
5	Transfer from a skilled nursing facility
6	Transfer from another health care facility
7	Emergency room
8	Court/law enforcement
9	Information not available

In the Australian context refer to METeOR 269976[31] "Episode of admitted patient care—admission mode", and METeOR 269947[32] "Episode of admitted patient care—referral source, public psychiatric hospital code".

31 http://meteor.aihw.gov.au/content/index.phtml/itemId/269976
32 http://meteor.aihw.gov.au/content/index.phtml/itemId/269947

2.2.2.15 PV1-15 Ambulatory status (IS) 00145

Definition: This field indicates any permanent or transient handicapped conditions. Refer to User defined Table 0009 - Ambulatory status (see page 82) for suggested entries.

User-defined Table 0009 - Ambulatory status

Value	Description
A0	No functional limitations
A1	Ambulates with assistive device
A2	Wheelchair/stretcher bound
A3	Comatose; non-responsive
A4	Disoriented
A5	Vision impaired
A6	Hearing impaired
A7	Speech impaired
A8	Non-English speaking
A9	Functional level unknown
B1	Oxygen therapy
B2	Special equipment (tubes, IVs, catheters)
B3	Amputee
B4	Mastectomy
B5	Paraplegic
B6	Pregnant

2.2.2.16 PV1-16 VIP indicator (IS) 00146

Definition: This field identifies the type of VIP. Refer to User-defined Table 0099 - VIP indicator (see page 82) for suggested values.

User-defined Table 0099 - VIP indicator

Value	Description
V1	No suggested values defined

In the Australian context the recommended values are:

Digit 1		Digit 2	
N	National leader (President, Prime Minister, royalty)	0	No special privacy or protection issues
R	Religious leader	1	Special privacy requirement
B	Senior business leader	2	Extreme privacy requirement
M	Currently focus of media attention.	3	Armed protection/security, no special privacy issues
H	Hospital staff or near relative	4	Armed protection/security, special privacy requirement
V	Very important person, not otherwise defined	5	Armed protection/security, extreme privacy requirement
		6	Extreme protection/security, no special privacy issues
		7	Extreme protection/security, special privacy requirement
		8	Extreme protection/security, extreme privacy requirement
		9	Privacy or protection requirement, not otherwise defined

Codes H and V are the likely to be the most significant codes as hospital staff/near relative have been flagged in studies as the most likely to have inappropriate access to data and therefore H is import for auditing. The code V is used for non-specific flagging.

2.2.2.17 PV1-17 Admitting doctor (XCN) 00147

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the admitting physician information. Multiple names and identifiers for the same physician may be sent. The field sequences are not used to indicate multiple admitting doctors. The legal name must be sent in the first sequence. If the legal name is not sent, then a repeat delimiter must be sent in the first sequence. By local agreement, the name or ID may be absent in this field. Refer to User-defined Table 0010 - Physician ID (see page 79) for suggested values.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

2.2.2.18 PV1-18 Patient type (IS) 00148

Definition: This field contains site-specific values that identify the patient type. Refer to User-defined Table 0018 - Patient type (see page 84) for suggested values.

User-defined Table 0018 - Patient type

Value	Description
	No suggested values defined

In the Australian context refer to METeOR 584408[33] "Hospital service—care type".

2.2.2.19 PV1-19 Visit number (CX) 00149

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: **For backward compatibility** , a NM data type may be sent, but HL7 recommends that new implementations use the CX data type**.** This field contains the unique number assigned to each patient visit. The assigning authority and identifier type code are strongly recommended for all CX data types.

2.2.2.20 PV1-20 Financial class (FC) 00150

Components: <financial class (IS)> ^ <effective date (TS)>

Definition: This field contains the financial class(es) assigned to the patient for the purpose of identifying sources of reimbursement. Refer to User-defined Table 0064 - Financial class (see page 84) for suggested values.

User-defined Table 0064 - Financial class

METeOR 679815 'Funding source for hospital patients' codes	
Code	**Definition**
01	Health service budget (not covered elsewhere)

33 http://meteor.aihw.gov.au/content/index.phtml/itemId/584408

METeOR 679815 'Funding source for hospital patients' codes	
Code	**Definition**
02	Health service budget (due to eligibility for Reciprocal Health Care Agreement)
03	Health service budget (no charge raised due to hospital decision)
04	Department of Veterans' Affairs
05	Department of Defence
06	Correctional facility
07	Medicare Benefits Scheme
08	Other hospital or public authority (contracted care)
09	Private health insurance
10	Worker's compensation
11	Motor vehicle third party personal claim
12	Other compensation (e.g. public liability, common law, medical negligence)
13	Self-funded
88	Other funding source
Supplementary values:	http://meteor.aihw.gov.au/ui/helpWindow.phtml?itemId=tag.helpMeteorItemOtherPermissibleValues
98	Not known

2.2.2.21 PV1-21 Charge price indicator (IS) 00151

Definition: This field contains the code used to determine which price schedule is to be used for room and bed charges. Refer to User-defined Table 0032 - Charge/price indicator (see page 85).

User-defined Table 0032 - Charge/price indicator

Value	Description
AUSM85	85% of Medicare schedule fee
AUSM75	75% of Medicare schedule fee
AUSM100	Medicare schedule fee
AUSAMA	Australian Medical Association recommended fee

Note: Australian variation to HL7 V2.4 with the length changed from 2 to 13 characters to incorporate rules defined in HL7 Clause 5.4.1.

2.2.2.22 PV1-22 Courtesy code (IS) 00152

Definition: This field indicates whether the patient will be extended certain special courtesies. Refer to User-defined Table 0045 - Courtesy code (see page 86) for suggested values.

User-defined Table 0045 - Courtesy code

In the Australian context the recommended values are:

Value	Description
CV	Personal cover (Muslim, etc.)
ME	Muslim (face bed to east)
RO	Religious orders

2.2.2.23 PV1-23 Credit rating (IS) 00153

Definition: This field contains the user-defined code to determine past credit experience. Refer to User defined Table 0046 - Credit rating (see page 86) for suggested values.

User-defined Table 0046 - Credit rating

In the Australian context users may define their own table values:

Value	Description

2.2.2.24 PV1-24 Contract code (IS) 00154

Definition: This field identifies the type of contract entered into by the healthcare facility and the guarantor for the purpose of settling outstanding account balances. Refer to User-defined Table 0044 - Contract code (see page 86) for suggested values.

User-defined Table 0044 - Contract code

In the Australian context use a two character code from METeOR 270114[34] Contract role and METeOR 270475[35] Contract type:

Contract role (METeOR 270114)		**Contract type (METeOR 270475)**		
Value	**Description**	**Value**	**Description**	**Detailed description**
A	Hospital A (Purchaser)	1	Contract type B	A health authority / other external purchaser contracts hospital B for admitted service which is funded outside the standard funding arrangements.
B	Hospital B (Provider)	2	Contract type ABA	Patient admitted by Hospital A. Hospital A contracts Hospital B for admitted or non-admitted patient service. Patient returns to Hospital A on completion of service by Hospital B. For example, a patient has a hip replacement at Hospital A, then receives aftercare at Hospital B, under contract to Hospital A. Complications arise and the patient returns to Hospital A for the remainder of care.
		3	Contract type AB	Patient admitted by Hospital A. Hospital A contracts Hospital B for admitted or non-admitted patient service. Patient does not return to Hospital A on completion of service by Hospital B. For example, a patient has a hip replacement at Hospital A and then receives aftercare at Hospital B, under contract to Hospital A. Patient is separated from Hospital B.
		4	Contract type (A)B	This contract type occurs where a Hospital A contracts Hospital B for the whole episode of care. The patient does not attend Hospital A. For example, a patient is admitted for endoscopy at Hospital B under contract to Hospital A.
		5	Contract type BA	Hospital A contracts Hospital B for an admitted patient service following which the patient moves to Hospital A for remainder of care. For example, a patient is admitted to Hospital B for a gastric resection procedure under contract to Hospital A and Hospital A provides after care.

2.2.2.25 PV1-25 Contract effective date (DT) 00155

Definition: This field contains the date that the contract is to start or started.

34 http://meteor.aihw.gov.au/content/index.phtml/itemId/270114
35 http://meteor.aihw.gov.au/content/index.phtml/itemId/270475

2.2.2.26 PV1-26 Contract amount (NM) 00156

Definition: This field contains the amount to be paid by the guarantor each period according to the contract.

2.2.2.27 PV1-27 Contract period (NM) 00157

Definition: This field specifies the duration of the contract for user-defined periods.

2.2.2.28 PV1-28 Interest code (IS) 00158

Definition: This field indicates the amount of interest that will be charged the guarantor on any outstanding amounts. Refer to User-defined Table 0073 - Interest rate code (see page 88) for suggested values.

User-defined Table 0073 - Interest rate code

Value	Description
	No suggested values defined

2.2.2.29 PV1-29 Transfer to bad debt code (IS) 00159

Definition: This field indicates that the account was transferred to bad debts and gives the reason. Refer to User-defined Table 0110 - Transfer to bad debt code (see page 88) for suggested values.

User-defined Table 0110 - Transfer to bad debt code

In the Australian context reason for bad debt include:

Value	Description
B	Bankrupt
D	Deceased
L	Left address

2.2.2.30 PV1-30 Transfer to bad debt date (DT) 00160

Definition: This field contains the date that the account was transferred to a bad debt status.

2.2.2.31 PV1-31 Bad debt agency code (IS) 00161

Definition: **This field can be used as a ST type for backward compatibility** . This field uniquely identifies the bad debt agency to which the account was transferred. This code is site defined. One possible implementation would be to edit against a table such as User-defined Table 0021 - Bad debt agency code (see page 88); however, this is not required.

User-defined Table 0021 - Bad debt agency code

Value	Description
	No suggested values defined

2.2.2.32 PV1-32 Bad debt transfer amount (NM) 00162

Definition: This field contains the amount that was transferred to a bad debt status.

2.2.2.33 PV1-33 Bad debt recovery amount (NM) 00163

Definition: This field contains the amount recovered from the guarantor on the account.

2.2.2.34 PV1-34 Delete account indicator (IS) 00164

Definition: This field indicates that the account was deleted from the file and gives the reason. Refer to User-defined Table 0111 - Delete account code for suggested values.

User-defined Table 0111 - Delete account code

Value	Description
	No suggested values defined

2.2.2.35 PV1-35 Delete account date (DT) 00165

Definition: This field contains the date that the account was deleted from the file.

2.2.2.36 PV1-36 Discharge disposition (IS) 00166

Definition: This field contains the disposition of the patient at time of discharge (i.e., discharged to home, expired, etc.). Refer to User-defined Table 0112 - Discharge dispositio (see page 89)n for suggested values. In the US, this field is used on UB92 FL22. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

User-defined Table 0112 - Discharge disposition

Value	Description
01	Discharged to home or self care (routine discharge)
02	Discharged/transferred to another short term general hospital for inpatient care
03	Discharged/transferred to skilled nursing facility (SNF)
04	Discharged/transferred to an intermediate care facility (ICF)
05	Discharged/transferred to another type of institution for inpatient care or referred for outpatient services to another institution
06	Discharged/transferred to home under care of organized home health service organization

Value	Description
07	Left against medical advice or discontinued care
08	Discharged/transferred to home under care of Home IV provider
09	Admitted as an inpatient to this hospital
10 … 19	Discharge to be defined at state level, if necessary
20	Expired (i.e. dead)
21 ... 29	Expired to be defined at state level, if necessary
30	Still patient or expected to return for outpatient services (i.e. still a patient)
31 … 39	Still patient to be defined at state level, if necessary (i.e. still a patient)
40	Expired (i.e. died) at home
41	Expired (i.e. died) in a medical facility; e.g., hospital, SNF, ICF, or free standing hospice
42	Expired (i.e. died) - place unknown

In the Australian context refer to METeOR 270094[36] "Mode of Separation" and METeOR 616654[37] Episode end status

2.2.2.37 PV1-37 Discharged to location (CM) 00167

Components: <discharge location (IS)> ^ <effective date (TS)>

Definition: This field indicates the healthcare facility to which the patient was discharged. Refer to User defined Table 0113 - Discharged to location (see page 90) for suggested values.

User-defined Table 0113 - Discharged to location

Value	Description
	No suggested values defined

2.2.2.38 PV1-38 Diet type (CE) 00168

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates a special diet type for a patient. Refer to User-defined Table 0114 - Diet type (see page 90) for suggested values.

36 http://meteor.aihw.gov.au/content/index.phtml/itemId/270094
37 http://meteor.aihw.gov.au/content/index.phtml/itemId/616654

User-defined Table 0114 - Diet type

Value	Description
	No suggested values defined

Note: In the Australian context this data element is very limited in its application to dietary systems. Diet orders are used to communicate diet type - refer to Section 4.7 of HL7 V2.4.

2.2.2.39 PV1-39 Servicing facility (IS) 00169

Definition: This field is used in a multiple facility environment to indicate the healthcare facility with which this visit is associated. Refer to User-defined Table 0115 - Servicing facility (see page 91) for suggested values.

User-defined Table 0115 - Servicing facility

Value	Description
	No suggested values defined

An optional sixth component, the facility ID, may be valued in each individual location field in PV1, instead of placing it here.

In the Australian context refer to METeOR 269973[38] "Establishment identifier".

2.2.2.40 PV1-40 Bed status (IS) 00170

Definition: This field has been retained for backward compatibility only. The information is now held in the fifth component of the PL datatype in PV1-3. This field contains the status of the bed. Refer to User-defined Table 0116 - Bed status (see page 91) for suggested values.

User-defined Table 0116 - Bed status

Value	Description
C	Closed
H	Housekeeping
O	Occupied
U	Unoccupied
K	Contaminated
I	Isolated

38 http://meteor.aihw.gov.au/content/index.phtml/itemId/269973

2.2.2.41 PV1-41 Account status (IS) 00171

Definition: This field contains the account status. Refer to User-defined Table 0117 - Account status (see page 92) for suggested values.

User-defined Table 0117 - Account status

Value	Description
	No suggested values defined

2.2.2.42 PV1-42 Pending location (PL) 00172

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field indicates the point of care, room, bed, healthcare facility ID, and bed status to which the patient may be moved. The first component may be the nursing station for inpatient locations, or the clinic, department, or home for locations other than inpatient. If a value exists in the fifth component (location status), it supersedes the value in PV1-40 - bed status.

2.2.2.43 PV1-43 Prior temporary location (PL) 00173

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is used to reflect the patient's temporary location (such as the operating room/theatre or x-ray) prior to a transfer from a temporary location to an actual location, or from a temporary location to another temporary location. The first component may be the nursing station for inpatient locations, or the clinic, department, or home for locations other than inpatient.

2.2.2.44 PV1-44 Admit date/time (TS) 00174

Definition: This field contains the admit date/time. It is to be used if the event date/time is different than the admit date and time, i.e., a retroactive update. This field is also used to reflect the date/time of an outpatient/emergency patient registration.

In the Australian context refer to METeOR 269967[39] "Admission date" and METeOR 682942[40] "Admission time".

2.2.2.45 PV1-45 Discharge date/time (TS) 00175

Definition: This field contains the discharge date/time. It is to be used if the event date/time is different than the discharge date and time, that is, a retroactive update. This field is also used to reflect the date/time of an outpatient/emergency patient discharge.

39 http://meteor.aihw.gov.au/content/index.phtml/itemId/269967
40 http://meteor.aihw.gov.au/content/index.phtml/itemId/682942

In the Australian context refer to METeOR 270025[41] "Separation date" and METeOR 682919[42] "Separation time".

2.2.2.46 PV1-46 Current patient balance (NM) 00176

Definition: This field contains the visit balance due.

2.2.2.47 PV1-47 Total charges (NM) 00177

Definition: This field contains the total visit charges.

2.2.2.48 PV1-48 Total adjustments (NM) 00178

Definition: This field contains the total adjustments for visit.

2.2.2.49 PV1-49 Total payments (NM) 00179

Definition: This field contains the total payments for visit.

2.2.2.50 PV1-50 Alternate visit ID (CX) 00180

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the alternative, temporary, or pending optional visit ID number to be used if needed. Refer to HL7 Table 0061 - Check digit scheme (see page 190) for valid values. Refer to HL7 Table 0203 - Identifier type (see page 301) for valid values. The assigning authority and identifier type code are strongly recommended for all CX data types.

2.2.2.51 PV1-51 Visit indicator (IS) 01226

Definition: This field specifies the level on which data are being sent. It is the indicator used to send data at two levels, visit and account. HL7 recommends sending an 'A' or no value when the data in the message are at the account level, or 'V' to indicate that the data sent in the message are at the visit level. Refer to User-defined Table 0326 - Visit indicator (see page 93) for suggested values.

The value of this element affects the context of data sent in PV1, PV2 and any associated hierarchical segments (e.g. DB1, AL1, DG1, etc.).

User-defined Table 0326 - Visit indicator

Value	Description
A	Account level (default)
V	Visit level

41 http://meteor.aihw.gov.au/content/index.phtml/itemId/270025
42 http://meteor.aihw.gov.au/content/index.phtml/itemId/682919

2.2.2.52 PV1-52 Other healthcare provider (XCN) 01274

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE) ^ <name validity range (DR)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: **This field has been retained for backward compatibility only.** Use the ROL-Role Segment to communicate providers not specified elsewhere. This field contains the other healthcare providers (e.g. nurse care practitioner, midwife, physician assistant). Multiple healthcare providers can be sent. Depending on local agreements, either the ID or the name may be absent from this field. Use values in User-defined Table 0010 - Physician ID (see page 79) for first component.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

2.2.3 PV2- patient visit - additional information segment

The PV2 segment is a continuation of information contained on the PV1 segment.

HL7 Attribute Table - PV2 – Patient visit – additional information

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	80	PL	C			00181	Prior Pending Location
2	250	CE	O		0129 (see page 97)	00182	Accommodation Code
3	250	CE	O			00183	Admit Reason
4	250	CE	O			00184	Transfer Reason
5	25	ST	O	Y		00185	Patient Valuables
6	25	ST	O			00186	Patient Valuables Location
7	2	IS	O	Y	0130 (see page 98)	00187	Visit User Code
8	26	TS	O			00188	Expected Admit Date/Time
9	26	TS	O			00189	Expected Discharge Date/Time

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
10	3	NM	O			00711	Estimated Length of Inpatient Stay
11	3	NM	O			00712	Actual Length of Inpatient Stay
12	50	ST	O			00713	Visit Description
13	250	XCN	O	†		00714	Referral Source Code
14	8	DT	O			00715	Previous Service Date
15	1	ID	O		0136 (see page 415)	00716	Employment Illness Related Indicator
16	1	IS	O		0213 (see page 99)	00717	Purge Status Code
17	8	DT	O			00718	Purge Status Date
18	2	IS	O		0214 (see page 100)	00719	Special Program Code
19	1	ID	O		0136 (see page 415)	00720	Retention Indicator
20	1	NM	O			00721	Expected Number of Insurance Plans
21	1	IS	O		0215 (see page 100)	00722	Visit Publicity Code
22	1	ID	O		0136 (see page 415)	00723	Visit Protection Indicator
23	250	XON	O	Y		00724	Clinic Organization Name
24	2	IS	O		0216 (see page 101)	00725	Patient Status Code
25	1	IS	O		0217 (see page 101)	00726	Visit Priority Code
26	8	DT	O			00727	Previous Treatment Date

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
27	2	IS	O		0112 (see page 89)	00728	Expected Discharge Disposition
28	8	DT	O			00729	Signature on File Date
29	8	DT	O			00730	First Similar Illness Date
30	250	CE	O		0218 (see page 0)	00731	Patient Charge Adjustment Code
31	2	IS	O		0219 (see page 103)	00732	Recurring Service Code
32	1	ID	O		0136 (see page 415)	00733	Billing Media Code
33	26	TS	O			00734	Expected Surgery Date and Time
34	1	ID	O		0136 (see page 415)	00735	Military Partnership Code
35	1	ID	O		0136 (see page 415)	00736	Military Non-Availability Code
36	1	ID	O		0136 (see page 415)	00737	Newborn Baby Indicator
37	1	ID	O		0136 (see page 415)	00738	Baby Detained Indicator
38	250	CE	O		0430 (see page 103)	01543	Mode of Arrival Code
39	250	CE		Y	0431	01544	Recreational Drug Use Code
40	250	CE	O		0432	01545	Admission Level of Care Code
41	250	CE	O	Y	0433	01546	Precaution Code
42	250	CE	O		0434	01547	Patient Condition Code
43	2	IS	O		0315	00759	Living Will Code

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
44	2	IS	O		0316	00760	Organ Donor Code
45	250	CE	O	Y	0435	01548	Advance Directive Code
46	8	DT	O			01549	Patient Status Effective Date
47	26	TS	C			01550	Expected LOA Return Date/Time

† Australian variation to HL7 V2.4 where the component repeatability has been removed.

2.2.3.0 PV2 field definitions

2.2.3.1 PV2-1 Prior pending location (PL) 00181

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is required for cancel pending transfer (A26) messages. In all other events it is optional.

2.2.3.2 PV2-2 Accommodation code (CE) 00182

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates the specific patient accommodations for this visit. Refer to User-defined Table 0129 - Accommodation code (see page 97) for suggested values.

User-defined Table 0129 - Accommodation code

Value	Description
	No suggested values defined

2.2.3.3 PV2-3 Admit reason (CE) 00183

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier

(ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the short description of the reason for patient admission.

2.2.3.4 PV2-4 Transfer reason (CE) 00184

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the short description of the reason for a patient location change.

2.2.3.5 PV2-5 Patient valuables (ST) 00185

Definition: This field contains the short description of patient valuables checked in during admission.

2.2.3.6 PV2-6 Patient valuables location (ST) 00186

Definition: This field indicates the location of the patient's valuables.

2.2.3.7 PV2-7 Visit user code (IS) 00187

Definition: This field further categorizes a patient's visit with respect to an individual institution's needs, and is expected to be site-specific. Refer to User-defined Table 0130 - Visit user code (see page 98) for suggested values.

User-defined Table 0130 - Visit user code

Value	Description
TE	Teaching
HO	Home
MO	Mobile Unit
PH	Phone

2.2.3.8 PV2-8 Expected admit date/time (TS) 00188

Definition: This field contains the date and time that the patient is expected to be admitted. This field is also used to reflect the date/time of an outpatient/emergency patient registration.

2.2.3.9 PV2-9 Expected discharge date/time (TS) 00189

Definition: This field contains the date and time that the patient is expected to be discharged. This is a non-event related date used by ancillaries to determine more accurately the projected workloads. This field is also used to reflect the anticipated discharge date/time of an outpatient/emergency patient, or an inpatient.

2.2.3.10 PV2-10 Estimated length of inpatient stay (NM) 00711

Definition: This field specifies the estimated days of inpatient stays.

2.2.3.11 PV2-11 Actual length of inpatient stay (NM) 00712

Definition: This field contains the actual days of inpatient stays. The actual length of the inpatient stay may not be calculated from the admission and discharge dates because of possible leaves of absence.

2.2.3.12 PV2-12 Visit description (ST) 00713

Definition: This field contains a brief user-defined description of the visit.

2.2.3.13 PV2-13 Referral source code (XCN) 00714

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE) ^ <name validity range (DR)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name and the identification numbers of the person or organization that made the referral. This person/organization is not the same as the referring doctor. For example, Joe Smith referred me to the Clinic (or to Dr. Jones at the Clinic).

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

2.2.3.14 PV2-14 Previous service date (DT) 00715

Definition: This field contains the date of previous service for the same recurring condition. This may be a required field for billing certain illnesses (e.g., accident related) to a third party.

2.2.3.15 PV2-15 Employment illness related indicator (ID) 00716

Definition: This field specifies whether a patient's illness was job-related. Refer to HL7 Table 0136 (see page 415) - Yes/ no indicator for valid values.

2.2.3.16 PV2-16 Purge status code (IS) 00717

Definition: This field contains the purge status code for the account. It is used by the application program to determine purge processing. Refer to User-defined Table 0213 - Purge status code (see page 99) for suggested values.

User-defined Table 0213 - Purge status code

Value	Description
P	Marked for purge. User is no longer able to update the visit.
D	The visit is marked for deletion and the user cannot enter new data against it.
I	The visit is marked inactive and the user cannot enter new data against it.

2.2.3.17 PV2-17 Purge status date (DT) 00718

Definition: This field contains the date on which the data will be purged from the system.

2.2.3.18 PV2-18 Special program code (IS) 00719

Definition: This field designates the specific health insurance program for a visit required for healthcare reimbursement. Examples include Child Health Assistance, Elective Surgery Program, Family Planning, etc. Refer to User-defined Table 0214 - Special program codes (see page 100) for suggested values.

User-defined Table 0214 – Special program codes

Value	Description
	No suggested values

2.2.3.19 PV2-19 Retention indicator (ID) 00720

Definition: This field allows the user to control the financial and demographic purge processes at the visit. It is used to preserve demographic and financial data on specific, high priority visits. Refer to HL7 Table 0136 - Yes/no indicator (see page 415) for valid values.

2.2.3.20 PV2-20 Expected number of insurance plans (NM) 00721

Definition: This field contains the number of insurance plans that may provide coverage for this visit.

2.2.3.21 PV2-21 Visit publicity code (IS) 00722

Definition: This field contains a user-defined code indicating what level of publicity is allowed (e.g., No Publicity, Family Only) for a specific visit. Refer to User-defined Table 0215 - Publicity code (see page 100) for suggested values. Refer to *PD1-11 - publicity code* for the patient level publicity code.

User-defined Table 0215 - Publicity code

Value	Description
	No suggested values

2.2.3.22 PV2-22 Visit protection indicator (ID) 00723

Definition: This field identifies the person's protection that determines, in turn, whether access to information about this person should be kept from users who do not have adequate authority for a specific visit. Refer to HL7 Table 0136 - Yes/no indicator (see page 415) for valid values. Refer to *PD1-12 - protection indicator* for the patient level protection indicator.

2.2.3.23 PV2-23 Clinic organization name (XON) 00724

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ < check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the organization name or sub-unit and identifier that is associated with the (visit) episode of care. For example, the Allergy or Oncology Clinic within the healthcare facility might be named.

2.2.3.24 PV2-24 Patient status code (IS) 00725

Definition: This field indicates the status of the episode of care: for instance, Active Inpatient, Discharged Inpatient. Refer to User-defined Table 0216 - Patient status (see page 101) for suggested values.

User-defined Table 0216 – Patient status

Value	Description
	No suggested values defined

2.2.3.25 PV2-25 Visit priority code (IS) 00726

Definition: This field contains the priority of the visit. Refer to User-defined Table 0217 - Visit priority code (see page 101) for suggested values.

User-defined Table 0217 - Visit priority code

Value	Description
1	Emergency
2	Urgent
3	Elective

2.2.3.26 PV2-26 Previous treatment date (DT) 00727

Definition: This field contains the date that the patient last had treatment for any condition prior to this visit. In the case of a prior hospital visit, it is likely to be the previous discharge date.

2.2.3.27 PV2-27 Expected discharge disposition (IS) 00728

Definition: This field describes what the patient's disposition is expected to be at the end of the visit. Refer to User-defined Table 0112 - Discharge disposition (see page 89) for suggested values.

User-defined Table 0112 - Discharge disposition

Value	Description
01	Discharged to home or self care (routine discharge)
02	Discharged/transferred to another short term general hospital for inpatient care
03	Discharged/transferred to skilled nursing facility (SNF)

Value	Description
04	Discharged/transferred to an intermediate care facility (ICF)
05	Discharged/transferred to another type of institution for inpatient care or referred for outpatient services to another institution
06	Discharged/transferred to home under care of organized home health service organization
07	Left against medical advice or discontinued care
08	Discharged/transferred to home under care of Home IV provider
09	Admitted as an inpatient to this hospital
10 … 19	Discharge to be defined at state level, if necessary
20	Expired (i.e. dead)
21 ... 29	Expired to be defined at state level, if necessary
30	Still patient or expected to return for outpatient services (i.e. still a patient)
31 … 39	Still patient to be defined at state level, if necessary (i.e. still a patient)
40	Expired (i.e. died) at home
41	Expired (i.e. died) in a medical facility; e.g., hospital, SNF, ICF, or free standing hospice
42	Expired (i.e. died) - place unknown

2.2.3.28 PV2-28 Signature on file date (DT) 00729

Definition: This field contains the date on which a signature was obtained for insurance billing purposes.

2.2.3.29 PV2-29 First similar illness date (DT) 00730

Definition: This field is used to determine if the patient has a pre-existing condition.

2.2.3.30 PV2-30 Patient charge adjustment code (CE) 00731

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains a user-defined code that indicates which adjustments should be made to this patient's charges. Refer to User-defined Table 0218 - Charge adjustment (see page 0) for suggested values. This field is the same as *GT1-26 - guarantor charge adjustment code* .

2.2.3.31 PV2-31 Recurring service code (IS) 00732

Definition: This field indicates whether the treatment is continuous. Refer to User-defined Table 0219 - Recurring service (see page 103) for suggested values.

User-defined Table 0219 – Recurring service

Value	Description
	No selected values

2.2.3.32 PV2-32 Billing media code (ID) 00733

Definition: This field indicates if the account is to be rejected from tape billing. Refer to HL7 Table 0136 - Yes/no indicator for valid values.

2.2.3.33 PV2-33 Expected surgery date and time (TS) 00734

Definition: This field contains the date and time on which the surgery is expected to occur.

2.2.3.34 PV2-34 Military partnership code (ID) 00735

Definition: This field indicates that a military healthcare facility has contracted with a non-military healthcare facility for the use of its services. Refer to HL7 Table 0136 - Yes/no indicator for valid values.

2.2.3.35 PV2-35 Military non-availability code (ID) 00736

Definition: This field indicates whether a patient has permission to use a non-military healthcare facility for treatment. Refer to HL7 Table 0136 - Yes/no indicator (see page 415) for valid values.

2.2.3.36 PV2-36 Newborn baby indicator (ID) 00737

Definition: This field indicates whether the patient is a baby. Refer to HL7 Table 0136 - Yes/no indicator (see page 415) for valid values.

2.2.3.37 PV2-37 Baby detained indicator (ID) 00738

Definition: This field indicates if the baby is detained after the mother's discharge. Refer to HL7 Table 0136 - Yes/no indicator (see page 415) for valid values.

2.2.3.38 PV2-38 Mode of arrival code (CE) 01543

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: Identifies how the patient was brought to the healthcare facility. Refer to User-defined Table 0430 - Mode of arrival code (see page 103) for suggested values.

User-defined Table 0430 - Mode of arrival code

Value	Description
A	Ambulance
C	Car
F	On foot
H	Helicopter
P	Public Transport
O	Other
U	Unknown

2.2.3.39 PV2-39 Recreational drug use code (CE) 01544

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates what recreational drugs the patient uses. It is used for the purpose of room assignment. Refer to User-defined Table 0431 - Recreational drug use code (see page 104) for suggested values.

User-defined Table 0431 - Recreational drug use code

Value	Description
A	Alcohol
K	Kava
M	Marijuana
T	Tobacco - smoked
C	Tobacco - chewed
O	Other
U	Unknown

2.2.3.40 PV2-40 Admission level of care code (CE) 01545

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates the acuity level assigned to the patient at the time of admission. Refer to User-defined Table 0432 - Admission level of care code (see page 104) for suggested values.

User-defined Table 0432 - Admission level of care code

Value	Description
AC	Acute
CH	Chronic
CO	Comatose
CR	Critical
IM	Improved
MO	Moribund

2.2.3.41 PV2-41 Precaution code (CE) 01546

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates non-clinical precautions that need to be taken with the patient. Refer to User-defined Table 0433 - Precaution code (see page 105) for suggested values.

User-defined Table 0433 - Precaution code

Value	Description
A	Aggressive
B	Blind
C	Confused
D	Deaf
I	On IV
N	"No-code" (i.e. Do not resuscitate)
P	Paraplegic
O	Other
U	Unknown

2.2.3.42 PV2-42 Patient condition code (CE) 01547

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates the patient's current medical condition for the purpose of communicating to non-medical outside parties, e.g. family, employer, religious minister, media, etc,. Refer to User-defined Table 0434 - Patient condition cod (see page 106)e for suggested values.

User-defined Table 0434 - Patient condition code

Value	Description
A	Satisfactory
C	Critical
P	Poor
S	Stable
O	Other
U	Unknown

2.2.3.43 PV2-43 Living will code (IS) 00759

Definition: This field indicates whether or not the patient has a living will and, if so, whether a copy of the living will is on file at the healthcare facility. If the patient does not have a living will, the value of this field indicates whether the patient was provided information on living wills. Refer to User-defined Table 0315 - Living will code (see page 106) for suggested values. See also *PD1-7 - Living will code*.

User-defined Table 0315 - Living will code

Value	Description
Y	Yes, patient has a living will
F	Yes, patient has a living will but it is not on file
N	No, patient does not have a living will and no information was provided
I	No, patient does not have a living will but information was provided
U	Unknown

2.2.3.44 PV2-44 Organ donor code (IS) 00760

Definition: This field indicate whether the patient wants to donate his/her organs and whether an organ donor card or similar documentation is on file with the healthcare organization. Refer to User-defined Table 0316 - Organ donor code (see page 106) for suggested values. See also *PD1-8 - Organ don*or.

User-defined Table 0316 - Organ donor code

Value	Description
Y	Yes, patient is a documented donor and documentation is on file

Value	Description
F	Yes, patient is a documented donor, but documentation is not on file
N	No, patient has not agreed to be a donor
I	No, patient is not a documented donor, but information was provided
R	Patient leaves organ donation decision to relatives
P	Patient leaves organ donation decision to a specific person
U	Unknown

2.2.3.45 PV2-45 Advance directive code (CE) 01548

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates the patient's instructions to the healthcare facility. Refer to User-defined Table 0435 - Advance directive code (see page 107) for suggested values. See also *PD1-15 - Advance directive code*.

User-defined Table 0435 - Advance directive code

Value	Description
DNR	Do not resuscitate

2.2.3.46 PV2-46 Patient status effective date (DT) 01549

Definition: This field indicates the effective date for *PV2-24 - Patient Status* .

2.2.3.47 PV2-47 Expected LOA return date/time (TS) 01550

Definition: This field is conditionally required for A21 - Patient goes on LOA. It may be populated in A22 - Patient returns from LOA as well as in the *A53 - Cancel LOA for a patient* and the *A54 - Cancel patient returns from LOA triggers*. This field contains the date/time that the patient is expected to return from LOA.

2.2.4 AL1 - Patient allergy information segment

The AL1 segment contains patient allergy information of various types. Most of this information will be derived from user-defined tables. Each AL1 segment describes a single patient allergy.

HL7 Attribute Table - AL1 – Patient allergy information

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4†	SI †	R			00203	Set ID - AL1
2	250	CE	O		0127 (see page 108)	00204	Allergen Type Code

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
3	250	CE	R			00205	Allergen Code/Mnemonic/Description
4	250	CE	O		0128 (see page 109)	00206	Allergy Severity Code
5	250	ST	O	Y		00207	Allergy Reaction Code
6	8	DT	B			00208	Identification Date

† Typographical error in HL7 V2.4 where the CE data type is incorrect and should be a SI data type of length 4.

See 5.2 ORM - general order message (event O01) (see page 279), and 7 Patient Referral (see page 315) for usage of this segment.

2.2.4.0 AL1 field definitions

2.2.4.1 AL1-1 Set ID - AL1 (CE) 00203

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

2.2.4.2 AL1-2 Allergen type code (CE) 00204

Definition: This field indicates a general allergy category (drug, food, pollen, etc.). Refer to User-defined Table 0127 - Allergen type (see page 108) for suggested values.

User-defined Table 0127 - Allergen type

Value	Description
DA	Drug allergy
FA	Food allergy
MA	Miscellaneous allergy
MC	Miscellaneous contraindication
EA	Environmental Allergy
AA	Animal Allergy
PA	Plant Allergy
LA	Pollen Allergy
AD	Administrative Alert †

† Australian Variance to HL7 International.

2.2.4.3 AL1-3 Allergen code/mnemonic/description (CE) 00205

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field uniquely identifies a particular allergen. This element may conform to some external, standard coding system (that must be identified), or it may conform to local, largely textual or mnemonic descriptions.

2.2.4.4 AL1-4 Allergy severity code (CE) 00206

Definition: This field indicates the general severity of the allergy. Refer to User-defined Table 0128 - Allergy severity (see page 109) for suggested values.

User-defined Table 0128 - Allergy severity

Value	Description
SV	Severe
MO	Moderate
MI	Mild
U	Unknown

2.2.4.5 AL1-5 Allergy reaction code (ST) 00207

Definition: This field identifies the specific allergic reaction that was documented. This element may conform to some external, standard coding system, or it may conform to a local, largely textual or mnemonic descriptions (e.g., convulsions, sneeze, rash, etc.).

2.2.4.6 AL1-6 Identification date (DT) 00208

Definition: this field contains the date that the allergy was identified.

2.2.5 QRD - original-style query definition segment

The QRD segment is used to define a query.

HL7 Attribute Table – QRD - Original-Style Query Definition

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	26	TS	R			00025	Query Date/Time
2	1	ID	R		0106 (see page 110)	00026	Query Format Code
3	1	ID	R		0091 (see page 110)	00027	Query Priority

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
4	10	ST	R			00028	Query ID
5	1	ID	O			00030	Deferred Response Type
6	26	TS	O		0107 (see page 111)	00029	Deferred Response Date/Time
7	10	CQ	R		0126 (see page 111)	00031	Quantity Limited Request
8	250	XCN	R	Y		00032	Who Subject Filter
9	250	CE	R	Y	0048 (see page 112)	00033	What Subject Filter
10	250	CE	R	Y		00034	What Department Data Code
11	20	CM	O	Y		00035	What Data Code Value Qual.
12	1	ID	O		0108 (see page 114)	00036	Query Results Level

See 5.3 OSQ/OSR- query response for order status (event Q06) (see page 281) for usage of this segment.

2.2.5.0 QRD field definitions

2.2.5.1 QRD-1 Query date/time (TS) 00025

Definition: This field contains the date the query was generated by the application program.

2.2.5.2 QRD-2 Query format code (ID) 00026

Definition: This field refers to HL7 Table 0106 - Query/response format code (see page 110) for valid values.

HL7 Table 0106 - Query/response format code

Value	Description
D	Response is in display format
R	Response is in record-oriented format
T	Response is in tabular format

2.2.5.3 QRD-3 Query priority (ID) 00027

Definition: This field contains the time frame in which the response is expected. Refer HL7 Table 0091 - Query priority (see page 110) for valid values. Table values and subsequent fields specify time frames for response.

HL7 Table 0091 - Query priority

Value	Description
D	Deferred
I	Immediate

2.2.5.4 QRD-4 Query ID (ST) 00028

Definition: This field contains a unique identifier for the query. Assigned by the querying application. Returned intact by the responding application.

2.2.5.5 QRD-5 Deferred response type (ID) 00029

Definition: This field refers to HL7 Table 0107 - Deferred response type (see page 111) for valid entries.

HL7 Table 0107 - Deferred response type

Value	Description
B	Before the Date/Time specified
L	Later than the Date/Time specified

2.2.5.6 QRD-6 Deferred response date/time (TS) 00030

Definition: This field contains the date/time before or after which to send a deferred response. If not present, the response can be sent when it is available. (See QRD-5-Deferred response type above).

2.2.5.7 QRD-7 Quantity limited request (CQ) 00031

Components: <quantity (NM)> ^ <units (CE)>
Definition: This field contains the maximum length of the response that can be accepted by the requesting system. Valid responses are numerical values (in the first component) given in the units specified in the second component. Refer to HL7 Table 0126 - Quantity limited request (see page 111) for valid entries for the second component. Default is LI (lines).

HL7 Table 0126 - Quantity limited request

Value	Description
CH	Characters
LI	Lines
PG	Pages
RD	Records

Value	Description
ZO	Locally defined

2.2.5.8 QRD-8 Who subject filter (XCN) 00032

Components: <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)> Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the subject, or who the inquiry is about.
Note: This field should not have been a required field. However, for backwards compatibility it remains a required field. There are some queries in the standard that have not required this field.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

2.2.5.9 QRD-9 What subject filter (CE) 00033

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>
Definition: This field describes the kind of information that is required to satisfy the request. Valid values define the type of transaction inquiry and may be extended locally during implementation.

HL7 Table 0048 - What subject filter

Value	Description
ADV	Advice/diagnosis
ANU	Nursing unit lookup (returns patients in beds, excluding empty beds)
APN	Patient name lookup
APP	Physician lookup
ARN	Nursing unit lookup (returns patients in beds, including empty beds)
APM	Medical record number query, returns visits for a medical record number
APA	Account number query, return matching visit
CAN	Cancel. Used to cancel a query
DEM	Demographics
FIN	Financial
GID	Generate new identifier

Value	Description
GOL	Goals
MRI	Most recent inpatient
MRO	Most recent outpatient
NCK	Network clock
NSC	Network status change
NST	Network statistic
ORD	Order
OTH	Other
PRB	Problems
PRO	Procedure
RES	Result
RAR	Pharmacy administration information
RER	Pharmacy encoded order information
RDR	Pharmacy dispense information
RGR	Pharmacy give information
ROR	Pharmacy prescription information
SAL	All schedule related information, including open slots, booked slots, blocked slots
SBK	Booked slots on the identified schedule
SBL	Blocked slots on the identified schedule
SOF	First open slot on the identified schedule after the start date/time
SOP	Open slots on the identified schedule
SSA	Time slots available for a single appointment
SSR	Time slots available for a recurring appointment
STA	Status
VXI	Vaccine Information
XID	Get cross-referenced identifiers

See the HL7 Implementation Guide for detailed examples of use of various query filter fields.

2.2.5.10 QRD-10 What department data code (CE) 00034

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the possible contents including test number, procedure number, drug code, item number, order number, etc. The contents of this field are determined by the contents of the previous field. This field could contain multiple occurrences separated by repetition delimiters.

Note: This field should not have been a required field. However, for backwards compatibility it remains a required field. There are some queries in the standard that have not required this field.

2.2.5.11 QRD-11 What data code value qual (CM) 00035

Components: <first data code value (ST)> ^ <last data code value (ST)>

Definition: This field contains start and stop values separated by a component separator. These values constitute a window or range to further refine the inquiry.

2.2.5.12 QRD-12 Query results level (ID) 00036

Definition: This field is used to control level of detail in results. Refer to HL7 Table 0108 - Query results level (see page 114) for valid values. See section 4 and 5.

HL7 Table 0108 - Query results level

Value	Description
O	Order plus order status
R	Results without bulk text
S	Status only
T	Full results

2.2.6 QRF - original style query filter segment

The QRF segment is used with the QRD segment to further refine the content of an original style query.

HL7 Attribute Table – QRF – Original style query filter

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	20	ST	R	Y		00037	Where Subject Filter
2	26	TS	B			00038	When Data Start Date/Time

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
3	26	TS	B			00039	When Data End Date/Time
4	60	ST	O	Y		00040	What User Qualifier
5	60	ST	O	Y		00041	Other QRY Subject Filter
6	12	ID	O	Y	0156 (see page 116)	00042	Which Date/Time Qualifier
7	12	ID	O	Y	0157 (see page 116)	00043	Which Date/Time Status Qualifier
8	12	ID	O	Y	0158 (see page 116)	00044	Date/Time Selection Qualifier
9	60	TQ	O			00694	When Quantity/Timing Qualifier
10	10	NM	O			01442	Search Confidence Threshold

See 5.3 OSQ/OSR- query response for order status (event Q06) (see page 281) for usage of this segment.

2.2.6.0 QRF field definitions

2.2.6.1 QRF-1 Where subject filter (ST) 00037

Definition: This field identifies the department, system, or subsystem to which the query pertains. This field may repeat as in LAB~HEMO, etc.

2.2.6.2 QRF-2 When data start date/time (TS) 00038

Definition: This field has been retained for backward compatibility only. It is recommended to use QRF-9 – When quantity/timing qualifier. When used for backward compatibility, this field contains the dates and times equal to or after which this value should be included.

2.2.6.3 QRF-3 When data end date/time (TS) 00039

Definition: This field has been retained for backward compatibility only. It is recommended to use QRF-9 – When quantity/timing qualifier. When used for backward compatibility, this field contains the dates and times equal to or before which this date should be included. This field contains the dates and times equal to or before which this date should be included.

2.2.6.4 QRF-4 What user qualifier (ST) 00040

Definition: This field contains an identifier to further define characteristics of the data of interest.

2.2.6.5 QRF-5 Other QRY subject filter (ST) 00041

Definition: This field contains a filter defined locally for use between two systems. This filter uses codes and field definitions that have specific meaning only to the applications and/or site involved.

2.2.6.6 QRF-6 Which date/time qualifier (ID) 00042

Definition: This field specifies the type of date referred to in QRF-2-When data start date/time and QRF-3-When data end date/time.

HL7 Table 0156 - Which date/time qualifier

Value	Description
ANY	Any date/time within a range
COL	Collection date/time, equivalent to film or sample collection date/time
ORD	Order date/time
RCT	Specimen receipt date/time, receipt of specimen in filling ancillary (Lab)
REP	Report date/time, report date/time at filing ancillary (i.e., Lab)
SCHED	Schedule date/time

2.2.6.7 QRF-7 Which date/time status qualifier (ID) 00043

Definition: This field specifies the status type of objects selected in date range defined by QRF-2-When data start date/time and QRF-3-When data end date/time.

HL7 Table 0157 - Which date/time status qualifier

Value	Description
ANY	Any status
CFN	Current final value, whether final or corrected
COR	Corrected only (no final with corrections)
FIN	Final only (no corrections)
PRE	Preliminary
REP	Report completion date/time

2.2.6.8 QRF-8 Date/time selection qualifier (ID) 00044

Definition: This field allows the specification of certain types of values within the date/time range.

HL7 Table 0158 - Date/time selection qualifier

Value	Description
1ST	First value within range
ALL	All values within the range
LST	Last value within the range
REV	All values within the range returned in reverse chronological order (This is the default if not otherwise specified.)

2.2.6.9 QRF-9 When quantity/timing qualifier (TQ) 00694

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (CM)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ID)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>
Definition: This field allows an interval definition to be used for specifying multiple responses to a query. With the addition of this filter, new query specifications should no longer use QRF-2-When data start date/time and QRF-3-When data end date/time in future implementations.

2.2.6.10 QRF-10 Search confidence threshold (NM) 01442

Definition: This field contains a numeric value used to establish the minimum threshold match. The value instructs the responding system to return no records for patients whose “match weight” on the look-up was lower than this user-defined value.
Example: |0.50| or |8.25|
One use of this optional field is in Patient Look-up transactions where the searching system employs a numeric algorithm for determining potential matches to patient/person lookups.

2.3 Localisation Details

2.3.1 Billing

Generally this information will be supplied by the Placer in the Order Request with the following factors to be considered:

1. The pricing scale that is to be applied to the order - sent in PV1-21 Charge Price Indicator (see page 85).
2. The person to be billed for the tests. In most cases the patient is responsible for the payment of the request; however if the patient is a child the invoice must be sent to a parent/guardian or other responsible party and this is indicated in the GT1 segment.
3. For billing applicable to a health fund use the IN1 segment.
4. For the funding source refer to PV1-20 Financial Class (see page 84).

International ORU Structure

By way of comparison the International HL7 2.4 standard has the following message structure which is varied by the Australian localisation (See section 1.7).

International ORU Message Structure

```
ORU^R01           Unsolicited Observation Message
MSH               Message Header
{
  [
    PID           Patient Identification
    [PD1]         Additional Demographics
    [{NK1}]       Next of Kin/Associated Parties
    [{NTE}]       Notes and Comments
  [
    PV1           Patient Visit
    [PV2]         Patient Visit - Additional Info
  ]
  ]
  {
    [ORC]         Order common
    OBR           Observations Report ID
    {[NTE]}       Notes and comments
    [CTD]         Contact Data
  {
    [OBX]         Observation/Result
    {[NTE]}       Notes and comments
  }
  [{FT1}]         Financial Transaction
  {[CTI]}         Clinical Trial Identification
  }
}
[DSC]             Continuation Pointer
```

3 Datatypes

This section covers the datatypes in use in Australia. It omits datatypes that are deprecated from earlier versions of the standard as these should not be used in the Australian context. All data in an HL7 V2 message is encoded as text and every field required escaping/unescaping of HL7 delimiters and care should be taken to ensure that producers and consumers of this data ensure this is performed.

Datatypes can occur at several levels in a message. When a datatype is used in a field it will use the component separator (^), but when the datatype is embedded in another datatype a sub-component separator (&) may be used. Some datatypes are conceptually a combination of other datatypes e.g. an EI data type is a combination of a string (ST) identifier and a Hierarchical Designator (HD). This allows for an organization to provide a unique identifier within their namespace. In messages the HD component of an EI datatype will appear in other places in the message as a HD data type to identify the organization uniquely. If binary or non ASCII data is used it will be encoded, usually using base64 encoding.

3.1 Introduction

The following data types are those used in the Australian context.

Figure 3-1 HL7 data types by category

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
Alphanumeric				

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 173)	String	199		Text: |almost any data at all| URL encoded in an ST component: ^http://www.pacs.poupon.edu/wado.jsp^ ISO OID encoded in an ST subcomponent: &2.16.840.1.113883.1.1&
~~TX~~	~~Text data~~	~~65536~~	TX SHALL NOT be used for a standalone field value. Use ST or FT instead. TX may be used in a component of a more complex datatype where the standard specifies, e.g. TQ	
FT (see page 157)	Formatted text	65536	May contain formatting commands enclosed in escape characters.	|\.sp\(skip one vertical line)|
Numerical				

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 163)	Numeric array	65536	For waveform data only This data type is used to represent a series (array) of numeric values, each one having a data type of NM. A field of this type may contain a one-dimensional array (vector or row) of numbers.	| 125^34^-22^-234^569^442^-212^6| vector of 8 numbers | 1.2^-3.5^5.2~2.0^3.1^-6.2~3.5^7.8^-1.3| 3 x 3 array of numbers | ^2^3^4~5^^^8~9^10~~17^18^19^20| 5 x 4 array of numbers with the values in positions (1,1), (2,2), (2,3), (3,3), (3,4), (4,1), (4,2), (4,3), and (4,4) not present
3 Datatypes (see page 164)	Numeric			|999| |-123.792|
3 Datatypes (see page 172)	Sequence ID		A non-negative integer in the form of a NM field. This data type is used in the "Set-ID" fields of PID, PV1, IN1, GT1, OBR and OBX fields.	Used to number OBX segments in a report. OBX|**9**|CE|11475-1^Culture^LN|1|3092008^Staphylococcus aureus^SCT|||A|||F

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 172)	Structured numeric		<comparator (ST)> ^ <num1 (NM)> ^ <separator/suffix (ST)> ^ <num2 (NM)>	|>^100| (greater than 100) |^100^-^200| (equal to range of 100 through 200) |^1^:^128| (ratio of 1 to 128, e.g., the results of a serological test) |^2^+| (categorical response, e.g., occult blood positivity)
Identifier				
3 Datatypes (see page 163)	Coded values for HL7 tables		The value of such a field follows the formatting rules for an ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types.	ID field is OBR-25-result status (HL7 table 0123): |F|.
3 Datatypes (see page 163)	Coded value for user-defined tables		The value of such a field follows the formatting rules for a ST field except that it is drawn from a site-defined (or user-defined) table of legal values.	PID-8 Administrative sex: |M|
3 Datatypes (see page 184)	Version identifier		<version ID (ID)> ^ <internationalization code (CE)> ^ <international version ID (CE). Used to identify the HL7 version.	MSH-12 : |2.4^AUS|

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 159)	Hierarchic designator		<namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)> The HD is designed to be used either as a local identifier (with only the <namespace ID> valued) or a publicly-assigned identifier, a UID (<universal ID> and <universal ID type> both valued).	MSH-4 : |LAB^3456^AUSNATA| ISO example with only the 2nd and 3rd components valued: |^2.16.840.1.113883.19^ISO| A UUID example : |^478A0114-EBF0-7701-A023-6841FF05731A^UUID| A DNS example : |^falcon.iupui.edu^DNS| Local use only: a HD that looks like an IS data type : ▪ |LAB1| ▪ |RX.PIMS.SystemB.KP.CA.SCA|
3 Datatypes (see page 156)	Entity identifier		<entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)> The entity identifier defines a given entity within a specified series of identifiers.	ORC-2: |L12345^LOCAL GP SURGERY^RX123456789^L|

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 167)	Reference pointer		<pointer (ST) > ^ < application ID (HD)> ^ <type of data (ID)> ^ <subtype (ID)> This data type transmits information about data stored on another system.	An image on a web server at: http://testsite/neurologicalstudy.asp?path=/All%20Studies/AccessionNumber=2016F0001100-1 |?path=/All%20Studies/AccessionNumber=2016F0001100-1^ http://testsite/neurologicalstudy.asp&URI^IMAGE^JPEG|
3 Datatypes (see page 164)	Person location		<point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ < location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)> This data type is used to specify a patient location within a healthcare institution.	A nursing unit at Community Hospital: 4 East, room 136, bed B : 4E^136^B^CommunityHospital^^N^^^ A clinic at University Hospitals: Internal Medicine Clinic located in the Briones building, 3rd floor : InternalMedicine^^^UniversityHospitals^^C^Briones^3^
Date/Time				
3 Datatypes (see page 153)	Date/Time range		YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]	

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 153)	Date		YYYY[MM[DD]] By site-specific agreement, YYYYMMDD may be used where backward compatibility must be maintained.	PV1-25: |20150808| Month only: |201503|
3 Datatypes (see page 173)	Time		HH[MM[SS[.S[S[S[S]]]]]][+/-ZZZZ] Generally not used in the Australian context. TS is used instead.	|0800| = Eight AM, local time of the sender. |0000| = midnight |13| = 1pm (with a precision of hours), local time of sender. |093544.2312| = 44.2312 seconds after Nine thirty-five AM, local time of sender. |235959+1100| = 1 second before midnight in a time zone eleven hours ahead of Universal Coordinated Time (i.e., East of Greenwich).
3 Datatypes (see page 183)	Time stamp		YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]	ORC-7: |20160704010159+1000|
Code Values				
3 Datatypes (see page 141)	Coded element	250	<identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)> This data type transmits codes and the text associated with the code.	OBX-3: |22664-7^UREA^LN^Cr^UREA^NATA3456-008|.

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 146)	Coded with no exceptions	250	<identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST) >	IAM-6
3 Datatypes (see page 148)	Coded with exceptions	250	<identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST) >	OBR-25
3 Datatypes (see page 151)	Extended composite ID with check digit	250	<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)> This data type is used for specifying an identifier with its associated administrative detail.	PID-3: ▪ |8003608833357361^^^AUSHIC^NI| ▪ |P0057804^^^^PN~4009887514^^^AUSHIC^MC~SMIAL001^^^^PI| ▪ |1234567^4^M11^ADT01^MR^University Hospital|

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 187)	Extended composite ID number and name	250	Replaces CN data type as of v 2.3. <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)> This data type is used extensively appearing in the PV1, ORC, RXO, RXE, OBR and SCH segments , as well as others, where there is a need to specify the ID number and name of a person.	PV1-7: ▪ |8003619900015717^Smith^John^S^^DR^MD^^AUSHIC^^^^NPI| ▪ |045678AB^HANDY^JOHN^^^DR^^^AUSHICPR|
Generic				
3 Datatypes (see page 146)	Composite		A field that is a combination of other meaningful data fields. Each portion is called a **component**. No new CM's are allowed after HL7 Version 2.2. ***The CM data type is maintained strictly for backward compatibility and may not be used for the definition of new fields.***	PRD-7: |8003619900015717^NPI^AUSHIC|
Demographics				

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 185)	Extended address	250	Replaces the AD data type as of v 2.3. <street address (SAD)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)> ^ <address validity range (DR)> Countries typically have a standard method of formatting addresses. This data type does not specify the formatting usages, only the components of a postal address.	PID-11: |14th Floor^50 Paterson St^Coorparoo^QLD ^4151|
3 Datatypes (see page 194)	Extended person name	250	Replaces PN data type as of v 2.3. <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) > ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ <name assembly order (ID)>	| Smith^John^J^III^ DR^PHD^L|
3 Datatypes (see page 192)	Extended composite name and ID number for organizations	250	<organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>	ORC-21: |ABC Medical Group^^1234567| HPI-O: |ABCD Organisation^L^80 03621566684455^^ ^AUSHIC^NOI|

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 198)	Extended telecommunications number	250	Replaces TN data type as of v 2.3 [**N**NN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)> Note: Components five through nine reiterate the basic function of the first component in a delimited form that allows the expression of both local and international telephone numbers. As of 2.3, the recommended form for the telephone number is to use the delimited form rather than the unstructured form supported by the first component (which is left in for backward compatibility only).	International phone number: | ^WPN^PH^^61^7^32615492| Interstate/ intrastate phone number: | ^WPN^PH^^^07^32615492| Local area' phone number: | ^WPN^PH^^^^32615492| Mobile phone number: | ^WPN^CP^^^^0412545585| Email address: | ^NET^Internet^J.Smith@work.com|
Specialty/ Chapter Specific				
Waveform				
3 Datatypes (see page 135)	Channel definition		For waveform data only e.g. graphs, echo cardiographs. <channel identifier (CM)> ^ <waveform source (CM)> ^ <channel sensitivity/units (CM) > ^ <channel calibration parameters (CM)> ^ <sampling frequency (NM)> ^ <minimum/maximum data values (CM)>	

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 163)	Multiplexed array		Multiplexed array Components: <sample 1 from channel 1 (NM)> ^ <sample 1 from channel 2 (NM)> ^ <sample 1 from channel 3 (NM)> ...~<sample 2 from channel 1 (NM)> ^ <sample 2 from channel 2 (NM)> ^ <sample 2 from channel 3 (NM)> ...~ ... This data type is used to represent channel-multiplexed waveform data, (e.g., the digitized values from an analog-to-digital converter or other digital data source).	
3 Datatypes (see page 163)	Numeric array		For waveform data only <value1 (NM)> ^ <value2 (NM)> ^ <value3 (NM)> ^ <value4 (NM)> ^ ...	
3 Datatypes (see page 153)	Encapsulated data		Supports ASCII MIME-encoding of binary data. <source application (HD) > ^ <type of data (ID)> ^ <data subtype (ID)> ^ <encoding (ID)> ^ <data (ST)> This data type transmits encapsulated data from a source system to a destination system.	OBX|16|ED| HTML^Display Segment as HTML^AUSPDI|| ^text^HTML^A^<?xml version="1.0" encoding="utf-8"?><!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd"><html xmlns="http://www.w3.org/1999/xhtml"> <head> <title> Content .....|
Patient Administration / Financial Information				

Data Type Category / Data type	Data Type Name	LEN	Notes / Format	Examples
3 Datatypes (see page 157)	Financial class		<financial class (IS)> ^ <effective date (TS)> This component contains the financial class assigned to a person.	PV1-20
Time Series:				
3 Datatypes (see page 173)	Timing/ quantity		For timing/quantity specifications for orders, see HL7 International Standard Chapter 4, Section 4.3. <quantity (CQ)> ^ <interval (*)> ^ <duration (*)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (*)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)> Note: only components 4 and 6 used.	Urgent : | ^^^199710230915^ ^S| Routine :| ^^^199711071020|

* for subcomponents of these elements please refer to the definition in the text.

3.1.1 USE OF ESCAPE SEQUENCES IN TEXT FIELDS

3.1.1.1 Formatting codes

When a field of type TX, FT, or CF is being encoded, the escape character may be used to signal certain special characteristics of portions of the text field. The character \ will be used to represent the character so designated in a message. An **escape sequence** consists of the escape character followed by an escape code ID of one character, zero (0) or more data characters, and another occurrence of the escape character. The following escape sequences are defined:

\H\	start highlighting
\N\	normal text (end highlighting)
\F\	field separator
\S\	component separator
\T\	subcomponent separator

\R\	repetition separator
\E\	escape character
\Xdddd...\	hexadecimal data

The **escape sequences** for field separator, component separator, subcomponent separator, repetition separator, and escape character are also valid within an ST data field.
No escape sequence may contain a nested escape sequence.

3.1.1.3 Highlighting

In designating highlighting, the sending application is indicating that the characters that follow somehow should be made to stand out, but leaving the method of doing so to the receiving application. Depending on device characteristics and application style considerations, the receiving application may choose reverse video, boldface, underlining, blink, an alternate colour or another means of highlighting the displayed data.

For example the message fragment:
DSP| TOTAL CHOLESTEROL \H\240*\N\ [90 - 200]
might cause the following data to appear on a screen or report:
TOTAL CHOLESTEROL **240*** [90 - 200]
whereas another system may choose to show the 240* in red.

3.1.1.4 Special character

The special character escape sequences (\F\, \S\, \R\, \T\, and \E\) allow the corresponding characters to be included in the data in a text field, though the actual characters are reserved.

For example, the message fragment
DSP| TOTAL CHOLESTEROL 180 \F\90 - 200\F\
DSP| \S\----------\S\
would cause the following information to be displayed, given suitable assignment of separators:
TOTAL CHOLESTEROL 180 |90 - 200|
^----------^

3.1.1.5 Hexadecimal

Variance to HL7 International. The hexadecimal escape sequence (\Xdddd...\) must not be used.

3.1.1.6 Escape sequences supporting multiple character sets for FT, ST, and TX data types

Variance to HL7 International. The single-byte character escape sequence \Cxxyy\ and multi-byte character escape sequence \Mxxyyzz\ must not be used.

3.2 CD - channel definition

This data type is used for labeling of digital waveform data.

Components: <channel identifier (CM)> ^ <waveform source (CM)> ^ <channel sensitivity/units (CM)> ^<channel calibration parameters (CM)> ^ <channel sampling frequency (NM)> ^ <minimum/maximum data values (CM)>

Subcomponents of channel identifier: <channel number (NM)> & <channel name (ST)>

Subcomponents of waveform source: <Source name 1 (ST)> & <Source name 2 (ST)>

Subcomponents of channel sensitivity/units: <channel sensitivity (NM)> & < unit of measure identifier (ST)> & < unit of Measure Description (ST)> & < unit of Measure Coding System(IS)> & <alternate unit of measure identifier (ST)> & <alternate unit of Measure Description (ST)> &<alternate unit of Measure Coding System (IS)>

Subcomponents of channel calibration parameters: < channel calibration sensitivity correction factor (NM)> & < channel calibration baseline (NM)> & < channel calibration time skew (NM)> Subcomponents of minimum/ maximum data values: < minimum data value (NM)> & <maximum data value (NM)>

Definition: This data type is used for labeling of digital waveform data. It defines a recording channel which is associated with one of the values in each time sample of waveform data. Each channel has a number (which generally defines its position in a multichannel display) and an optional name or label (also used in displays). One or two named waveform sources may also be associated with a channel (providing for the use of differential amplifiers with two inputs). The other components of the channel definition data type are optional. The individual components are defined as follows:

3.2.1 Channel identifier (CM)

Subcomponents: <channel number (NM)> & <channel name (ST)>
Definition: Two subcomponents separated by subcomponent delimiters (&) which identify the channel, consisting of a channel number (required, maximum 4 characters, data type NM)and a channel name (optional, maximum 17 characters, data type ST).

3.2.2 Channel number (NM)

The channel number identifies the recording channel associated with a specified value in a time sample of data. It generally defines its position in a multichannel display.

3.2.3 Channel name (ST)

Definition: The channel name is a text string used as a label in waveform data displays. If this name is not present, the channel label displayed is <source1>-<source2>, where <source1> and <source2> are the names of the two waveform sources connected to this channel, or, if only one waveform sources <source1> is specified, the channel label displayed when the channel name is not given is <source1>.

3.2.4 Waveform source (CM)

Subcomponents: <Source name 1 (ST)> & <Source name 2 (ST)>

Definition: Identifies the source of the waveform connected to the channel. Two names (each maximum of 8 characters, data type ST) separated by a subcomponent delimiter (&) may be specified if it is necessary to individually identify the two inputs for a waveform. Only one name need be specified if the channel is connected to a single input. For example, in EKG recordings typically only one name is used (such as I or II); in electroencephalography, two names are typically used, one for each input of the differential amplifier (such as F3 and C3). (NOTE: Although the SIG voted to make waveform source a coded entry, this is not syntactically possible. We do not have a sub-sub-component delimiter available to separate the sub-fields of the proposed coded entry. Therefore, waveform source remains a string data type.).

3.2.4.1 Source name 1 (ST)

Definition: Identifies the first input for the waveform source.

3.2.4.2 Source name 2 (ST)

Definition: Identifies the second input for the waveform source.

3.2.5 Channel sensitivity and units (CM)

Subcomponents: <channel sensitivity (NM)> & < unit of measure identifier (ST)> & < unit of Measure Description (ST)> & < unit of Measure Coding System (IS)> & <alternate unit of measure identifier (ST)> & <alternate unit of Measure Description (ST)> & <alternate unit of Measure Coding System (IS)>

Definition: This CM data type defines the channel sensitivity (gain) and the units in which it is measured. This component consists of up to seven subcomponents, separated from each other by subcomponent delimiters (&). The first subcomponent specifies the sensitivity, while the remaining six subcomponents are used to specify the units of the sensitivity, using a format similar to the components of the coded entry (CE) data type. The subcomponents of the channel sensitivity and units are as follows:

3.2.5.1 Channel sensitivity (NM)

Defines the nominal value (maximum 20 characters, data type NM) that corresponds to one unit in the waveform data, that is, the effective resolution of the least significant bit of the ADC, and the polarity of the channel. The sensitivity incorporates both the amplifier gain and the actual ADC resolution. It does not, however, relate to the vertical scaling of a waveform display (it is, for example, a measure of voltage, not voltage per unit distance). For channels recording potential differences between two electrodes using a differential amplifier, a positive sensitivity indicates that a number in the waveform data which is greater than the channel baseline represents a potential at the first electrode which is more positive than that at the second electrode. A negative sensitivity indicates that a number in the waveform data which is greater than the channel baseline corresponds to a potential at the first electrode which is more negative than that at the second electrode.

3.2.5.2 Unit of measure identifier (ST)

Definition: A units designation (for example, mol, N, Pa, m or s). Codes from *The Unified Code for Units of Measure* (UCUM) are presented at http://unitsofmeasure.org/trac[43]. Although ISO+ is recommended in HL7 International documentation, UCUM is used in the Australian context as it facilitates unambiguous communication of quantities together with their units with the focus on electronic communication rather communication between humans.

3.2.5.3 Unit of measure description (ST)

Definition: The full text name of the unit of measure identifier (for example, microvolt, millivolt, volt, pascal or millimeters of mercury) from a designated system of units.

43 http://unitsofmeasure.org/trac)

3.2.5.4 Unit of measure coding system (IS)

Definition: The designated system of units. Refer to User-defined table 0396 – Coding System for suggested values.

3.2.5.5 Alternate unit of measure identifier (ST)

Definition: An alternate units designation (for example, uv, mv, v, pal, or mm(hg) .

3.2.5.6 Alternate unit of measure description (ST)

Definition: The full text name of the alternate unit of measure identifier (for example, microvolt, millivolt, volt, pascal or millimeters of mercury) from a designated system of units.

3.2.5.7 Alternate unit of measure coding system (IS)

Definition: The alternate designated system of units. Refer to User-defined table 0396 – Coding System for suggested values.

3.2.6 Channel calibration parameters (CM)

Subcomponents: < channel calibration sensitivity correction factor (NM)> & < channel calibration baseline (NM)> & < channel calibration time skew (NM)>

Definition: This component consists of three optional subcomponents (each a maximum of 20 characters, data type NM), separated from each other by subcomponent delimiters (&), which define corrections to channel sensitivity, baseline, and channel time skew which may be derived from a calibration procedure.

The three subcomponents are as follows:

3.2.6.1 Channel calibration sensitivity correction factor (NM)

Definition: Defines a correction factor for channel sensitivity which may be derived from the last calibration procedure performed. The actual channel sensitivity is the nominal channel sensitivity given in the previous component multiplied by the unitless correction factor.

3.2.6.2 Channel calibration baseline (NM)

Definition: Defines the actual channel baseline (the data value which corresponds to a nominal input signal of zero). The actual baseline may differ from the ideal because of a dc offset in the amplifier connected to the ADC. The actual baseline values for all channels (which need not be integers) may be determined at the time of calibration as the average digitized values obtained when a zero input signal is connected to each channel.

3.2.6.3 Channel calibration time skew (NM)

Definition: Defines the time difference between the nominal sampling (digitization) time (which would be the same for all channels) and the actual sampling time of the channel, in seconds (or fractions thereof). This value will differ from zero when all channels in the montage are not sampled simultaneously, as occurs in systems which sample successive channels at regular time intervals. This value may be determined from a calibration procedure in which an identical time-varying signal is applied to all channels and interchannel time differences are estimated, or more commonly it may be taken from the manufacturer's specifications for the digitizing system used. For example, for a system which samples successive channels at regular time intervals t, the time skew of channel number n would be

(n-1)t. The actual time of sampling (digitization) of sample number m of channel number n in such a system would be R + (m-1)/f + (n-1)t, where R is the reference time at the start of the epoch and f is the channel sampling frequency (t < 1/f).

3.2.7 Channel sampling frequency (NM)

Definition: Defines the sampling frequency in hertz of the channel, that is, the reciprocal of the time in seconds between successive samples (maximum 20 characters, data type NM). Note that this is the frequency of transmitted data, which may or may not be the actual frequency at which the data was acquired by an analog-to-digital converter or other digital data source (i.e. the data transmitted may be subsampled, or interpolated, from the originally acquired data.)

3.2.8 Minimum and maximum data values (CM)

Subcomponents: < minimum data value (NM)> & <maximum data value (NM)>

Definition: Defines the minimum and maximum data values which can occur in this channel in the digital waveform data, that is, the range of the ADC (each maximum of 20 characters, data type NM), and also specifies whether or not nonintegral data values may occur in this channel in the waveform data. If the minimum and maximum values are both integers (or not present), only integral data values may be used in this channel. If either the minimum or the maximum value contains a decimal point, then nonintegral as well as integral data values may be used in this channel. The minimum and maximum data values are separated by a component delimiter (&).

3.2.8.1 Minimum data value (NM)

Definition: Defines the minimum data value that can occur in this channel in the digital waveform data, and also specifies whether or not nonintegral data values may occur in this channel in the waveform data. For an n-bit signed ADC, the nominal baseline B = 0, and the minimum (L) and maximum (H) values may be calculated as follows:

$L = -2^{\wedge n-1}$

$H = 2^{\wedge (n-1)} - 1$

For an unsigned n-bit ADC, the minimum value L = 0, and the nominal baseline value (B) and maximum value (H) may be calculated from the formulas,

$B = 2^{\wedge (n-1)}$

$H = 2^{\wedge n} - 1$

The actual signal amplitude A (for differentially amplified potential measurements, the potential at electrode number one minus that at electrode number two) may be calculated from the value D (range L to H) in the waveform data using the actual baseline value B and the nominal sensitivity S and actual sensitivity correction factor C by the formula,

$A = SC(D-B)$

3.2.8.2 Maximum data value (NM)

Definition: Defines the maximum data value that can occur in this channel in the digital waveform data, and also specifies whether or not nonintegral data values may occur in this channel in the waveform data. For an n-bit signed ADC, the nominal baseline B = 0, and the minimum (L) and maximum (H) values may be calculated as follows:

$L = -2^{\wedge n}-1$

$H = 2^{\wedge (n-1)} - 1$

For an unsigned n-bit ADC, the minimum value L = 0, and the nominal baseline value (B) and maximum value (H) may be calculated from the formulas,

$B = 2^{(n-1)}$

$H = 2^{n} - 1$

The actual signal amplitude A (for differentially amplified potential measurements, the potential at electrode number one minus that at electrode number two) may be calculated from the value D (range L to H) in the waveform data using the actual baseline value B and the nominal sensitivity S and actual sensitivity correction factor C by the formula,

A = SC(D-B)

3.3 CE - coded element

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Length: 250

This data type transmits codes and the text associated with the code.

Example:

```
14682-9^Creatinine^LN^Cr^Creatinine^NATA2184
```

Component requirements:

When an <identifier (ST)> component is specified, the <name of the coding system> must also be specified.

If no <identifier (ST)> component is specified then no <name of coding system> (primary coding system) should be specified

<text (ST)> component is usually valued and this should be what is intended for display to the user. In some locations user display is not intended and the text may be blank.

When multiple codes are used Loinc codes (LN) should be placed first using the identifier rather than the alternate identifier.

When an <alternate identifier (ST)> component is specified, the <name of alternate coding system> must also be specified.

If no <alternate identifier (ST)> component is specified then no <name of alternate coding system> should be specified

Both <identifer> and <alternative identifier> must reflect the same concept in each of the primary and alternate coding system respectively. Each code may reflect differing levels of granularity within each coding system as the level of granularity differs between coding systems.

Alternate coding system must be a different from the primary coding system. As the 2 codes should describe the same concept the alternate text is optional.

3.3.1 Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

3.3.2 Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST).

3.3.3 Name of coding system (IS)

Each coding system is assigned a unique identifier. This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding** system components will be a unique code for a data item. Each system has a unique identifier. User-defined Table 0396 – Coding system contains the allowable values.

User defined Table 0396 - Coding System

Value	Description	Comment/Source	Category	Status
DCM	DICOM Controlled Terminology	Codes defined in DICOM Content Mapping Resource. Digital Imaging and Communications in Medicine (DICOM). NEMA Publication PS-3.16 National Electrical Manufacturers Association (NEMA). Rosslyn, VA, 22209. Available at: http://medical.nema.org[44]	Specific Non-Drug Code	Active
I10	ICD-10	World Health Publications, Albany, NY.	Specific Non-Drug Code	Active
ICD10AM	ICD-10 Australian modification			Active
ISO3166_1	ISO 3166-1 Country Codes	International Standards Organization standard 3166 contains 3 parts. Part 1 contains three tables for codes for countries of the world. These are 2-character alphabetic, 3-character alphabetic, and numeric codes.	Demographics	Active
ISO3166_2	ISO 3166-2 Country subdivisions	International Standards Organization standard 3166 contains 3 parts. Part 2 contains a complete breakdown into a relevant level of administrative subdivisions of all countries listed in ISO 3166-1. The code elements used consist of the alpha-2 code elem	Demographics	Active

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Value	Description	Comment/Source	Category	Status
ISO+	ISO 2955.83 (units of measure) with HL7 extensions	See chapter 7 (V2.6), Section 7.4.2.6		Active
IUPP	IUPAC/IFCC Property Codes	International Union of Pure and Applied Chemistry/ International Federation of Clinical Chemistry. The Silver Book: Compendium of terminology and nomenclature of properties in clinical laboratory sciences. Oxford: Blackwell Scientific Publishers, 1995. Henrik Olesen, M.D., D.M.Sc., Chairperson, Department of Clinical Chemistry, KK76.4.2, Rigshospitalet, University Hospital of Copenhagen, DK-2200, Copenhagen.	Specific Non-Drug Code	Active
LN	Logical Observation Identifier Names and Codes (LOINC®)	Regenstrief Institute, c/o LOINC, 1050 Wishard Blvd., 5th floor, Indianapolis, IN 46202. 317/630-7433. Available from the Regenstrief Institute server at https://loinc.org/. January 2000 version has identifiers, synonyms and cross-reference codes for reporting over 26,000 laboratory and related observations and 1,500 clinical measures.	Specific Non-Drug Code	Active
SCT	SNOMED Clinical Terms	SNOMED-CT concept identifier codes. SNOMED International, I325 Waukegan Rd, Northfield, IL, 60093, +1 800-323-4040, http://www.snomed.org[45]	Specific Non-Drug Code	Active
UCUM	UCUM UCUM code set for units of measure(from Regenstrief)	Added by motion of VOCABULARY T.C. 20060308 14-0-3		Active
AUSPDI	Australian Pathology Display Interface (Display Segment)	Used in AS4700.2-2012		Active

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Value	Description	Comment/Source	Category	Status
HL7AU	HL7 Australia	Required for defining CEs eg. MSH-12 <internal version ID (CE)>	Specific Non-Drug Code	
ROLECODE	Participation Mode	For use in v2.x systems interoperating with V3 systems. Identical to the code system 2.16.840.1.113883.5.111 RoleCode in the Version 3 vocabulary. For Code system content see : https://www.hl7.org/fhir/v3/RoleCode/cs.html	General Codes	Active
PHENX	PhenX ID	The PhenX (consensus measures for **Phen**otypes and e**X**posures) Toolkit https://www.phenxtoolkit.org/index.php	Specific Non-Drug Code	
DOCLE	Doctor Command Language	**DOCLE** (Doctor Command Language), is a non-numeric health coding and medical classification system. The **DOCLE** system is used in the electronic medical record and patient management software package, Medical Director.	Specific Non-Drug Code	
EN13606	CEN 13606	The EN 13606 class instance hierarchy. Refer to 6.2.2.2 of ISO 136006-2.	Class instance identifer	Active
99ZZZ or L	Local Coding system	Locally defined codes for purpose of sender or receiver. If multiple local codes exist, the format should be 99zzz, where z is an alphanumeric character Local general code for a site-defined code system used for a specific set of trading partners. The 'zzz' SHALL be any printable ASCII string. Length of the name SHALL not exceed field width, and is subject to local implementation.		Active
L	Local Coding system	Locally defined codes for purpose of sender or receiver.		Active
AMT	Australian Medicines Terminology	AMT Codes (contains therapeutic goods concepts)	Drug Code	Active
EAN	GTIN product code			

Value	Description	Comment/Source	Category	Status
TGA	Therapeutic Good Authority codes			
mims-codes		Refer to MIMS integrated http://www.hl7.org/oid/index.cfm?Comp_OID=1.2.36.1.2001.1005.11.1		
MIMS-UNITS	MIMS Units of measurement	Refer to MIMS integrated		
MIMS-FORM	MIMS Drug Form code	Refer to MIMS integrated		
MIMS-GENCODE	MIMS Generic code	Refer to MIMS integrated		
PBS	PBS Medicines Item Codes	http://www.pbs.gov.au/		
FHIR-ResourceType	FHIR Resource Type codes	Refer to https://www.hl7.org/fhir/valueset-resource-types.html for codes.		

NOTE 1: These are the more commonly used code systems in the Australian context. For the international code systems available refer to http://www.hl7.org/special/committees/vocab/table_0396/index.cfm.

Some organizations that publish code sets author more than one. The coding system, then, to be unique is a concatenation of the name of the coding authority organization and the name of its code set or table. When an HL7 table is used for a CE data type, the ***name of coding system*** component is defined as ***HL7nnnn*** where ***nnnn*** is the HL7 table number. Similarly, ISO tables will be named ISO nnnn, where nnnn is the ISO table number.

This table is not exhaustive and other non-standard coding schemes may be used.

NOTE 2: HL7 message validation tools should raise a warning when a code from a coding system above cannot be resolved from their respective terminology data source. Similarly, code systems encountered not found in this table should also raise a warning.

3.3.4 Alternate identifier (ST)

For explanation, see 3.3.1

3.3.5 Alternate text (ST)

For explanation, see 3.3.2. In many cases this can be left blank as the text is the same as 3.3.2

3.3.6 Name of alternate coding system (IS)

Note on the Alternate components (4, 5, 6) (for components 1, 2, 3)

These three components are defined analogously to the above for the alternate or local coding system. If the *alternate text* component is absent, and the alternate identifier is present, the *alternate text* will be taken to be the same as the *text* component. If the *alternate coding system* component is absent, it will be taken to mean the locally-defined system.

Note: The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.

Refer to User-defined Table 0396 – Coding system (see page 142) for valid values. When an HL7 table is used for a CE data type, the ***name of coding system*** component is defined as ***HL7nnnn*** where ***nnnn*** is the HL7 table number.

3.4 CM - composite

A field that is a combination of other meaningful data fields. Each portion is called a **component** . The specific components of CM fields are defined within the field descriptions. Certain other composites have been separately identified and are described below.

No new CMs are allowed after HL7 version 2.2.

The CM data type is maintained strictly for backward compatibility and may not be used for the definition of new fields.

Wherever a component of an HL7 field is itself an HL7 data type which contains components, its delimiters are demoted by one. Thus a component designated as a CE data type should be encoded as <identifier & text & name of coding system> (see CE - coded element (see page 141)). Note that since HL7 delimiters are not recursive, an HL7 data type containing components cannot be a subcomponent. When this level of detail is needed, each component of the HL7 data type can be encoded as a separate subcomponent. For an example of this, see the encoding of the filler order number in the order sequencing component of the Timing/Quantity data type.

3.5 CNE – coded with no exceptions

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST)>

Length: 250

Component requirements:

An <identifier (ST)> component is specified, the <name of the coding system> must also be specified.

If no <identifier (ST)> component is specified then no <name of coding system> should be specified

<text (ST)> component must be valued and this should be what is intended for display to the user.

When an <alternate identifier (ST)> component is specified, the <name of alternate coding system> must also be specified.

If no <alternate identifier (ST)> component is specified then no <name of alternate coding system> should be specified

<alternate text (ST)> component must be valued and this should be what is intended for display to the user.

3.5.1 Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

3.5.2 Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST). This is the corresponding text assigned by the coding system to the identifier.

3.5.3 Name of coding system (IS)

Each coding system is assigned a unique identifier. This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding** system components will be a unique code for a data item. Each system has a unique identifier.

User-defined Table 0396 – Coding system (see page 142) contains the allowable values. The table includes ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems as identified in the tables in Appendix 4 (see page 400) Others may be added as needed.

Some organizations that publish code sets author more than one. The coding system, then, to be unique is a concatenation of the name of the coding authority organization and the name of its code set or table. When an HL7 table is used for a CE data type, the ***name of coding system*** component is defined as ***HL7nnnn*** where ***nnnn*** is the HL7 table number. Similarly, ISO tables will be named ISOnnnn, where nnnn is the ISO table number.

3.5.4 Alternate identifier (ST)

Analogous to “Identifier” above. See 3.5.10 Usage notes:” for further description.

3.5.5 Alternate text (ST)

Analogous to “Text” above. See 3.5.10, “Usage notes:” for further description.

3.5.6 Name of alternate coding system (IS)

Analogous to “Name of Coding System” above. See 3.5.10, “Usage notes:” for further description.

3.5.7 Coding system version ID (ST)

This is the version ID for the coding system identified by component 1-3. It belongs conceptually to components 1-3 and appears here only for reasons of backward compatibility.

3.5.8 Alternate coding system version ID (ST)

This is the version ID for the coding system identified by components 4-6. It belongs conceptually to the group of Alternate components (see note 3.3.6) and appears here only for reasons of backward compatibility.

3.5.9 Original text (ST)

The original text that was available to an automated process or a human before a specific code was assigned. This component is optional.

3.5.10 Usage notes:

Components 1-3 and 7: The *identifier* is required and must be a valid code. *Coding system* must either be present and have a value from the set of allowed coding systems or if not present it will be interpreted to have the same meaning as if it had been valued with the code meaning "HL7 coding system." User-defined Table 0396 – Coding system (see page 142) contains the allowable values. If the coding system is any system other than "HL7 coding system," *version ID* must be valued with an actual version ID. If the coding system is "HL7 coding system," *version ID* may have an actual value or it may be absent. If *version ID* is absent, it will be interpreted to have the same value as the HL7 version number in the message header. Text description of code is optional but its use should be encouraged since it makes messages easier to review for accuracy, especially during interface testing and debugging.

Component 9: This is the original text that was available to an automated process or a human before a specific code was assigned. This component is optional.

Components 3-6 and 8: These components are optional. They are used to represent the local or user seen code as described. If present, components 3-6 and 8 obey the same rules of use and interpretation as described for components 1-3 and 7. If both are present, the identifiers in component 4 and component 1 should have exactly the same meaning, i.e., they should be exact synonyms.

CNE usage note: The CNE data type should be used when a required or mandatory coded field is needed.

User-defined Table 0396 – Coding system (see page 142) contains the allowable values. The table includes ASTM E1238-94, diagnostic, procedure, observation, drug and health outcomes coding systems. When an HL7 table is used for a CE data type, the ***name of coding system*** component is defined as ***HL7nnnn*** where ***nnnn*** is the HL7 table number.

3.6 CWE – coded with exceptions

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST)>

Length: 250

Component requirements:

When an <identifier (ST)> component is specified, the <name of the coding system> must also be specified.

If no <identifier (ST)> component is specified then no <name of coding system> should be specified

<text (ST)> component must be valued and this should be what is intended for display to the user.

When an <alternate identifier (ST)> component is specified, the <name of alternate coding system> must also be specified.

If no <alternate identifier (ST)> component is specified then no <name of alternate coding system> should be specified

<alternate text (ST)> component must be valued and this should be what is intended for display to the user.

3.6.1 Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

3.6.2 Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression.

3.6.3 Name of coding system (IS)

Each coding system is assigned a unique identifier. This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding** system components will be a unique code for a data item. Each system has a unique identifier.

User-defined Table 0396 – Coding system (see page 142) contains the allowable values. The table includes ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems as identified in the tables in Appendix 4 (see page 400) Others may be added as needed.

Some organizations that publish code sets author more than one. The coding system, then, to be unique is a concatenation of the name of the coding authority organization and the name of its code set or table. When an HL7 table is used for a CE data type, the ***name of coding system*** component is defined as ***HL7nnnn*** where ***nnnn*** is the HL7 table number. Similarly, ISO tables will be named ISOnnnn, where nnnn is the ISO table number.

3.6.4 Alternate identifier (ST)

Analogous to “Identifier” above.

3.6.5 Alternate text (ST)

Analogous to “Text” above.

3.6.6 Name of alternate coding system (IS)

Analogous to “Name of Coding System” above.

3.6.7 Coding system version ID (ST)

This is the version ID for the coding system identified by components 1-3. It belongs conceptually to the group of component 1-3 and appears here only for reasons of backward compatibility.

3.6.8 Alternate coding system version ID (ST)

This is the version ID for the coding system identified by components 4-6. It belongs conceptually to the group of alternate components

Name of alternate coding system (IS)”) and appears here only for reasons of backward compatibility.

3.6.9 Original text (ST)

The original text that was available to an automated process or a human before a specific code was assigned

3.6.10 Usage notes:

This is a field that is generally sent using a code, but where the code may be omitted in exceptional instances or by site agreement. Exceptional instances arise when the coding system being used does not have a code to describe the concept in the text.

Components 1-3 & 7 are used in one of three ways:

1) **Coded:** The identifier contains a valid code from a coding system. The coding system must either be present and have a value from the set of allowed coding systems, or if not present, it will be interpreted to have the same meaning as if it had been valued with the code meaning “HL7 coding system.”

User-defined Table 0396 – Coding system (see page 142) contains the allowable values. The table includes ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems as identified in the table in Appendix 4. If the coding system is any system other than “HL7 coding system”, version ID must be valued with an actual version ID. If the coding system is “HL7 coding system,” version ID may have an actual value or it may be absent. If version ID is absent, it will be interpreted to have the same value as the HL7 version number in the message header. Text description is optional, but its use should be encouraged to aid in readability of the message during testing and debugging.

Example 1a: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as a CWE value, and the value is taken from SNOMED International.

OBX|1|CWE|883-9^ABO Group^LN|1|F-D1250^Type O^SNM3^^^^3.4|||N||F<cr>

Example 1b: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as an CWE value, and the value is taken from a (currently hypothetical) HL7 table.

OBX|1|CWE|883-9^ABO Group^LN|1|O^Type O^HL74875^^^^2.3.1|||N||F<cr>

2) **Uncoded:** Text is valued, the identifier has no value, and coding system and version ID follow the same rules as discussed for option 1.

Example 2: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as an CWE value, and the value is sent as text because the correct clinical value, “Wesnerian” was not found in the set of allowed values.

OBX|1|CWE|883-9^ABO Group^LN|1|^Wesnerian^SNM3^^^^3.4|||A||F<cr>

3) **Data missing:** The name of the coding system is “HL7 CE Status,” version ID is either a real version, or if not present it has the same meaning as the version in the message header, and the identifier takes its value from one of the allowed CE field statuses. The codes for the allowed CE field statuses are shown below and will be maintained in a table as part of the HL7 vocabulary. Text description of code is optional.

Example 3: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as an LCE value, and no value can be sent because the test was not done.

OBX|1|CWE|883-9^ABO Group^LN|1|NAV^Not Available^HL70353^^^^2.3.1|||N||F<cr>

Component 9: This is the original text that was available to an automated process or a human before a specific code was assigned. This field is optional.

Components 3-6 & 8: Components 3-6 & 8 are optional. They are used to represent the local or user seen code. If present, components 3-6 & 8 obey the same rules of use and interpretation as described for components 1-3 & 7 (of the CWE data type). If both are present, the identifiers in component 4 and component 1 should have exactly the same meaning; i.e. they should be exact synonyms.

Example 4: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as an CWE value, and the value is taken from SNOMED International. The user seen fields are being used to represent a local coding system (99LAB) used in the sending system.

OBX|1|CWE|883-9^ABO Group^LN|1|F-D1250^Type O^SNM3^O^O Type Blood^99LAB^3.4^|||||F<cr>

Summary of CWE usage notes with table of status values for various states without values:

The CWE data type should be used for coded fields that are optional or where it is permissible to send text for items that are not yet a part of the approved value set. In the normal situation, the identifier is valued with the code from the value set. If the value of the field is known, but is not part of the value set, then the value is sent as text, and the identifier has no value. If the field has an unknown status, then third form of the field is used (see **Data missing** above), and the appropriate status for the field is selected from the table of allowed statuses. When no code exists, use values from HL7 Table 0353 – CWE statuses (see page 151).

HL7 Table 0353 - CWE statuses

Code	Description
U	Unknown
UASK	Asked but Unknown
NAV	Not available
NA	Not applicable
NASK	Not asked

Where a text modifier might accompany a code, the “field” in the HL7 message would be of data type CWE and would be allowed to repeat. The first instance of the field would be used, as per option 1; i.e. the identifier would have a valid code. The second instance of the repeating field would be used, as per option 2, that is, the text description would take the value of the free text modifier.

3.7 CX - extended composite ID with check digit

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

Length: 250

Example:

|1234567^4^M11^ADT01^MR^University Hospital|

This data type is used for specifying an identifier with its associated administrative detail.

Component requirements:

<ID (ST)> component must be specified and valid according to the identifier scheme of selected by the Identifier type code and Assigning Authority components.

<assigning authority (HD)> component must be valued and valid.

<identifier type code (ID)> component should be valued with a valid value from HL7 Table 0203 - Identifier type (see page 301).

3.7.1 ID (ST)

Definition: The value of the identifier itself. It is similar to the CK data type except that a ST data type is used instead of a NM data type.

3.7.2 Check digit (ST)

The check digit in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null. Many identifiers (e.g. Australian provider numbers) have check digits built into the identifier and this field is not used in that case.

3.7.3 Code identifying the check digit scheme employed (ID)

This field is not usually used in Australia. The international standard defines several check digit scheme codes than can be used when the ID is numeric. The use of this field in Australia is by site specific agreement.

Note: The check digit and code identifying check digit scheme are null if ID is alphanumeric.

3.7.4 Assigning authority (HD)

The assigning authority is a unique name of the system (or organization or agency or department) that creates the data. It is a HD data type. User-defined Table 0363 – Assigning authority (see page 310) is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD component, <namespace ID>.

Note: When the HD data type is used in a given segment as a component of a field of another data type, User-defined Table 0300 – Namespace ID (see page 160) (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementors may continue to use User-defined Table 0300 – Namespace ID (see page 160) for the first sub-component.

For Medicare provider numbers use "|AUSHICPR|"

3.7.5 Identifier type code (ID)

A code corresponding to the type of identifier. In some cases, this code may be used as a qualifier to the “Assigning authority” component. Refer to HL7 Table 0203 - Identifier type (see page 301) for suggested values.

3.7.6 Assigning facility (HD)

Subcomponents: <namespace ID (IS)> & < universal ID (ST)> & <universal ID type (ID)>

Definition: The place or location identifier where the identifier was first assigned to the patient. This component is not an inherent part of the identifier but rather part of the history of the identifier: as part of this data type, its existence is a convenience for certain intercommunicating systems.

Note: When the HD data type is used in a given segment as a component of a field of another data type, User-defined Table 0300 – Namespace ID (see page 160) (referenced by the first sub-component of the HD component), may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

3.7.7 Effective date (DT)

Definition: The first date, if known, on which the identifier is valid and active.

3.7.8 Expiration date (DT)

Definition: The last date, if known, on which the identifier is valid and active.

3.8 DR - date/time range

Components: <range start date/time (TS)> ^ <range end date/time (TS)>

Subcomponents of range start date/time and range stop date/time: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]

3.8.1 Range start date/time (TS)

Definition: The first component contains the earliest date/time (time stamp) in the specified range.

3.8.2 Range end date/time (TS)

The second component contains the latest date/time in the specified range. Note that the TS (time stamp) data type allows the specification of precision.

3.9 DT - date

Format: YYYY[MM[DD]]

In the current and future versions, the precision of a date may be expressed by limiting the number of digits used with the format specification YYYY[MM[DD]]. Thus, YYYY is used to specify a precision of “year,” YYYYMM specifies a precision of “month,” and YYYYMMDD specifies a precision of “day.”

Examples:

|19880704|

|199503|

3.10 ED - encapsulated data

Components: <source application (HD) > ^ <type of data (ID)> ^ <data subtype (ID)> ^ <encoding (ID)> ^ <data (ST)>

Subcomponents: <namespace ID (IS)> & < universal ID (ST)> & <universal ID type (ID)>

This data type transmits encapsulated data from a source system to a destination system. It contains the identity of the source system, the type of data, the encoding method of the data, and the data itself. This data type is similar to the RP (reference pointer) data type of RP - reference pointer (see page 167), except that instead of pointing to the data on another system, it contains the data which is to be sent to that system (refer to the RP - reference pointer (see page 167) section for discussion of MIME types).

Required components:

<type of data (ID)> must be valued.

<data subtype (ID)> must be valued.

<encoding (ID)> must be valued.

<data (ST)> must be valued.

3.10.1 Source application (HD)

A unique name that identifies the system which was the source of the data. Identical format and restrictions as in reference pointer (see Section 3.20.2, “Application ID (HD)”).

3.10.2 Type of data (ID)

Identical to “type of data” component in the reference pointer (RP) data type. (See Section 3.20.3, “Type of data (ID)”). Refer to HL7 Table 0191 – Type of referenced data (see page 167) for valid values.

Note that when MIME type is used in Type of data that readers must treat the values case insensitively as per RFC 2045[46].

3.10.3 Data subtype (ID)

Identical to “subtype” component in the reference pointer (RP) data type. (See Section 3.20.4, “Subtype (ID)”).

Refer to HL7 Table 0291 - Subtype of referenced data (see page 168) for valid values.

When this component is valued with a MIME <Subtype (ID)> value, then the corresponding MIME type must be used in the <Type of data (ID)> component.

When this component is valued with a HL7 2.4 defined <Subtype (ID)> (HL7 Table 0291 - Subtype of referenced data (see page 168)) value, then the corresponding HL7 2.4 type of data (HL7 Table 0191 – Type of referenced data (see page 167)) must be used in the <Type of data (ID)> component.
Note that when MIME type is used in Data subtype that readers must treat the values case insensitively as per RFC 2045[47].

3.10.4 Encoding (ID)

The type of encoding, if present, used to represent successive octets of binary data as displayable ASCII characters. Refer to HL7 Table 0299 - Encoding (see page 154) for valid values.

HL7 Table 0299 - Encoding

Value	Description
A	No encoding - data are displayable ASCII characters.
Hex	Hexadecimal encoding - consecutive pairs of hexadecimal digits represent consecutive single octets.

46 https://tools.ietf.org/html/rfc2045
47 https://tools.ietf.org/html/rfc2045

Value	Description
Base64	Encoding as defined by MIME (Multipurpose Internet Mail Extensions) standard RFC 1521. Four consecutive ASCII characters represent three consecutive octets of binary data. Base64 utilizes a 65-character subset of US-ASCII, consisting of both the upper and lower case alphabetic characters, digits "0" through “9,” “+,” “/,” and “=.”.

Base64 is defined as follows (adapted from MIME Internet standard RFC 1521, which has precedence over this description). Proceeding from left to right across a 24-bit input group (three octets), each 6-bit group is used as an index into an array of 64 printable characters. The character referenced by the index is placed in the encoded string. These characters are shown in HL7 Table 0290 - MIME base64 encoding characters (see page 155) ,and are selected so as to be universally representable.

Special processing is performed if fewer than 24 bits are available in an input group at the end of data. A full encoding quantum is always completed at the end of data. When fewer than 24 input bits are available in an input group, zero bits are added (on the right) to form an integral number of 6-bit groups.

Output character positions which are not required to represent actual input data are set to the character “=”. Since all canonically encoded output is an integral number of octets, only the following cases can arise: (1) the final quantum of input is an integral multiple of 24 bits; here, the final unit of encoded output will be an integral multiple of 4 characters with no “=” padding, (2) the final quantum of input is exactly 8 bits; here, the final unit of encoded output will be two characters followed by two “=”padding characters, or (3) the final quantum of input is exactly 16 bits; here, the final unit of encoded output will be three characters followed by one “=” padding character.

Receivers must evaluate this field in a case insensitive manner.

HL7 Table 0290 - MIME base64 encoding characters

Value	Code	Value	Code	Value	Code	Value	Code
0	A	17	R	34	l	51	52 z
1	B	18	S	35	j	52	52 0
2	C	19	T	36	k	53	53 1
3	D	20	U	37	l	54	54 2
4	E	21	V	38	m	55	55 3
5	F	22	W	39	n	56	56 4
6	G	23	X	40	o	57	57 5
7	H	24	Y	41	p	58	58 6
8	I	25	Z	42	q	59	59 7
9	J	26	a	43	r	60	60 8
10	K	27	b	44	s	61	61 9
11	L	28	c	45	t	62	62 +
12	M	29	d	46	u	63	63 /

Value	Code	Value	Code	Value	Code	Value	Code
13	N	30	e	47	v		
14	O	31	f	48	w	(pad)	=
15	P	32	g	49	x		
16	Q	33	h	50	y		

The interpretation of the encoded octets by any of the encoding methods, beyond what is either implicit or specified in the represented data type (such as their ordering within 16-bit or 32-bit binary words on the destination application), is determined by the destination application and is beyond the scope of this Standard.

3.10.5 Data (ST)

Displayable ASCII characters which constitute the data to be sent from source application to destination application. The characters are limited to the legal characters of the ST data type, as defined in ST - string data (see page 173) and, if encoded binary, are encoded according to the method of Section 3.10.2, “Type of data (ID).”

If the encoding component (see Section 3.10.4, “Encoding (ID)”) = ‘A’ (none), then the data component must be scanned before transmission for HL7 delimiter characters, and any found must be escaped by using the HL7 escape sequences defined in HL7 International v2.4 section 2.10, “Use of escape sequences in text fields.” On the receiving application, the data field must be de-escaped after being parsed.

If the encoding component (see Section 3.10.4, “Encoding (ID)”) does not equal ‘A,’ then, after encoding, the (encoded) data must be scanned for HL7 delimiter characters, and any found must be escaped by using the HL7 escape sequences. Only then can the component be added to the HL7 segment/message. On the receiving application, the data field must be de-escaped after being parsed out of the message before being decoded. This can be expressed as ‘encode’, ‘escape’, parse, ‘de-escape’, ‘decode’.

3.11 EI - entity identifier

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ < universal ID type (ID)>

The entity identifier defines a given entity within a specified series of identifiers.

The EI is appropriate for, but not limited to, machine or software generated identifiers. The generated identifier goes in the first component. The remaining components, 2 through 4, are known as the *assigning* authority; they identify the machine/system responsible for generating the identifier in component 1.

The specified series, the *assigning authority* , is defined by components 2 through 4. The assigning authority is of the hierarchic designator (HD) data type, but it is defined as three separate components in the EI data type, rather than as a single component as would normally be the case. This is in order to maintain backward compatibility with the EI’s use as a component in several existing data fields. Otherwise, the components 2 through 4 are as defined in HD - hierarchic designator (see page 159). Hierarchic designators (HD) are unique across a given HL7 implementation.

3.11.1 Entity identifier (ST)

The first component, <entity identifier>, is usually defined to be unique within the series of identifiers created by the <assigning authority>, defined by a hierarchic designator, represented by components 2 through 4. (See HD - hierarchic designator (see page 159).)

3.11.2 Namespace ID (IS)

See Section 3.13.1, “Namespace ID (IS)” for definition.

The assigning authority is a unique identifier of the system (or organization or agency or department) that creates the data. User-defined Table 0363 – Assigning authority (see page 310) is used as the HL7 identifier for the user defined table of values for this component.

Note: When the HD is used as a part of another data type, in this case as part of the EI data type, this table may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementers may continue to use User-defined Table 0300 – Namespace ID (see page 160) for the first component.

3.11.3 Universal ID (ST)

See Section 3.14.2, “Universal ID (ST)” for definition.

3.11.4 Universal ID type (ID)

Refer to HL7 Table 0301 - Universal ID type (see page 161) for valid values. See Section 3.14.3, “Universal ID type (ID)”, for definition.

3.12 FC - financial class

Components: <financial class (IS)> ^ <effective date (TS)>

3.12.1 Financial class (IS)

This component contains the financial class assigned to a person. User-defined Table 0064 - Financial class (see page 84) is used as the HL7 identifier for the user-defined table of values for this component.

3.12.2 Effective date (TS)

This component contains the effective date/time of the person’s assignment to the financial class specified in the first component.

3.13 FT - formatted text data

This data type is derived from the string data type by allowing the addition of embedded formatting instructions in addition to escaping of the HL7 delimiters. These instructions are limited to those that are intrinsic and independent of the circumstances under which the field is being used.

The FT field is of arbitrary length (up to 64k) and may contain formatting commands enclosed in escape characters.

Note: In the Australian context text results other than short phrases, on a single line, of less than 50 characters(which can use data type of ST) should be transmitted using OBX-2 data type of FT.

Many systems do not escape the HL7 delimiters when building messages and fail to unescape them when data is extracted. The HL7 delimiters i.e.: "|^~\&" need to be escaped in every field and in Free Text fields the Free text formatting characters also need to be handled. Failure to do this correctly makes transmitting data unreliable and breaks the interoperability of systems. Text data containing a '|" character could cause serious truncation of reports. Rich Text Format (RTF) contains many "\" characters and can be escaped but is better base 64 encoded as RTF can contain binary data and HL7V2 is generally restricted to the printable characters.

The special character escape sequences (\F\, \S\, \R\, \T\, and \E\) allow the corresponding characters to be included in the data in a text field, though the actual characters are reserved. For example, the message fragment

Example raw HL7

```
DSP| TOTAL CHOLESTEROL 180 \F\90 - 200\F\
DSP| \S\----------------\S\
```

would cause the following information to be displayed, given suitable assignment of separators:

Text actually displayed

```
TOTAL CHOLESTEROL 180 |90 - 200|
^----------------^
```

The escape sequences indicated above can occur in any field in a message, but are also valid in FT fields.

In formatted text (FT) data type fields, formatting commands also may be surrounded by the escape character. Each command begins with the . (period) character. The following formatting commands are available:

\.sp <number> End current output line and skip <number> vertical spaces. <number> is a positive integer or absent. If <number> is absent, skip one space. The horizontal character position remains unchanged.

\.br Begin new output line. Set the horizontal position to the current left margin and increment the vertical position by 1.

\.fi Begin word wrap or fill mode. This is the default state. It can be changed to a nowrap mode using the .nf command.

\.nf Begin no-wrap mode.

\.in <number> Indent <number> of spaces, where <number> is a positive or negative integer. This command cannot appear after the first printable character of a line.

\.ti <number> Temporarily indent <number> of spaces where number is a positive or negative integer. This command cannot appear after the first printable character of a line.

\.sk < number> Skip <number> spaces to the right.

\.ce End current output line and center the next line.

This is an example of the FT data type from a radiology impression section of a radiology report:

Formatted Text as Transmitted

```
\.in+4\\.ti-4\ 1. The cardio-mediastinal silhouette is now within normal limits.\.br\\.ti-4\ 2. Lung fields show minimal ground glass appearance.\.br\\.ti-4\ 3. A loop of colon visible in the left upper quadrant is distinctly abnormal with the appearance of mucosal effacement suggesting colitis.\.in-4\
```

Formatted text presented

```
1. The cardio-mediastinal silhouette is now within normal limits.

2. Lung fields show minimal ground glass appearance.


3. A loop of colon visible in the left upper quadrant is distinctly abnormal
   with the appearance of mucosal effacement suggesting colitis.
```

Character sets:
In order to support formatting of tables it is necessary to allow an extended character set. A character set should be specified in MSH-18. It must be either 8859/1 (extended ascii) or UTF-8 Optional support for UTF-8 should only be assumed for receivers where this is noted in a agreed capability register. Support for 8859/1 is mandatory. However, only ASCII characters shall be used in the MSH segment. The HL7 escape sequences \M and \C shall not be used. If MSH-18 is unvalued the ASCII character set is assumed.

Implementation of escaping and un-escaping must be done with considerable rigor. In particular it was noted that un-escaping cannot be done with search and replace. and is especially difficult with RTF which is a reason to use Base-64 encoding in an ED datatype to transmit RTF. Characters below Space (&20) are illegal and tabs (&09) should not be used (use eg. \.sk 8\ or spaces). FT data must be displayed using a non-proportionally spaced font for tables to work. Senders should limit intended display line lengths to 80 characters and receivers should ensure that 80 characters of text (using a non-proportional font) can be displayed without word wrapping the line of text.

For both senders and receivers the FT datatype provides all capabilities of the TX datatype. FT supports formatting sequences for tab, line break and other layout control. The TX datatype shall therefore not be used

3.14 HD - hierarchic designator

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Example: "ACME Pathology^2184^AUSNATA"

The HD is designed to be more powerful and more general replacement for the application identifier of HL7 versions 2.1 and 2.2. It adds two additional components, the <universal ID> and the <universal ID type> to the former *application ID* (which is renamed more generically to be the *namespace ID*) The basic definition of the HD is that it identifies an (administrative or system or application or other) entity that has responsibility for managing or assigning a defined set of instance identifiers (such as placer or filler number, patient identifiers, provider identifiers, etc.). This entity could be a particular health care application such as a registration system that assigns patient identifiers, a governmental entity such as a licensing authority that assigns professional identifiers or drivers' license numbers, or a facility where such identifiers are assigned.

In the case where a HD identifies an entity that assigns/creates instance identifiers such as a particular patient registration system, it defines an "assigning authority." In the case where a HD identifies a location where instance identifiers are given out (although they may be created by another entity at another location) such as a particular "department of motor vehicles office location," it defines an "assigning facility." These two different uses of the HD appear in many of the extended data types.

The “assigning authority” defined by the HD is similar in its role to the coding system (and version) part of the coded element data types: both identify a set of more discrete instance identifiers. The difference is that the set of HD-defined discrete instances contain identifiers of “real-world” things such as patient or clinical orders, while the coded element-defined set of discrete instances contains concept identifiers (codes).

The HD is designed to be used either as a local identifier (with only the <namespace ID> valued) or a publicly-assigned identifier, a UID (<universal ID> and <universal ID type> both valued). Syntactically, the HD is a group of two identifiers: a local identifier defined by the first component, and a universal identifier defined by the second and third components. HDs that have defined third components (defined UID types) must have a second component that is unique within the series of IDs defined by that component.

Note: The HD is used in fields that in earlier versions of HL7 used the IS data type. Thus, a single component HD (only the first component valued) will look like a simple IS data type for older systems expecting a single component in the place of the HD data type.

If the first component for the HD data type is present, the second and third components are optional. If the third component is present, then the second must also be present (although in this case the first is optional). The second and third components must either both be valued (both non-null), or both be not valued (both null).

This means that if all three components of the HD are valued, the entity identified by the first component is the same as the entity identified by components two and three taken together. However, implementers may choose, by site agreement, to specify that if all three components of the HD are valued, the first component defines a member in the set defined by the second and third components.

3.14.1 Namespace ID (IS)

User-defined Table 0300 - Namespace ID is used as the HL7 identifier for the user-defined table of values for this component.

User-defined Table 0300 – Namespace ID

Value	Description	Comment
AUSHICPR	Medicare Australia provider number	To support use of Medicare Australia provider numbers, for example in PV1-9 Consulting Doctor, OBR-28 Copy doctors
	Additional suggested values are user defined	

Note: When the HD is used in a given segment (either as a field or as a component of another data type) this table may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

3.14.2 Universal ID (ST)

The HD’s second component, <universal ID> (UID), is a string formatted according to the scheme defined by the third component, <universal ID type> (UID type). The UID is intended to be unique over time within the UID type. It is rigorously defined. Each UID must belong to one of the specifically enumerated schemes for constructing UIDs (defined by the UID type). The UID (second component) must follow the syntactic rules of the particular universal identifier scheme (defined by the third component). Note that these syntactic rules are not defined within HL7 but are defined by the rules of the particular universal identifier scheme (defined by the third component).

3.14.3 Universal ID type (ID)

The third component governs the interpretation of the second component of the HD. If the third component is a known UID refer to HL7 Table 0301 - Universal ID type (see page 161) for valid values, then the second component is a universal ID of that type.

HL7 Table 0301 - Universal ID type

Value	Description
AUSHICPR †	Australian HIC Provider Number
AUSHIC †	Medicare Australia
AUSDVA †	Australia - Dept. of Veterans Affairs
AUSNATA †	National Association of Testing Authorities, Australia
AUSLSPN †	Australian location specific practice number for Diagnostic Imaging
DNS	An Internet dotted name. Either in ASCII or as integers
GUID	Same as UUID
HCD	The CEN Healthcare Coding Scheme Designator. (Identifiers used in DICOM follow this assignment scheme.)
HL7	Reserved for future HL7 registration schemes
ISO	An International Standards Organization Object Identifier
L	Reserved for locally defined coding scheme
M	Reserved for locally defined coding scheme
N	Reserved for locally defined coding scheme
Random	Usually a base64 encoded string of random bits. The uniqueness depends on the length of the bits. Mail systems often generate ASCII string "unique names," from a combination of random bits and system names. Obviously, such identifiers will not be constrained to the base64 character set.
URI	Uniform Resource Identifier
UUID	The DCE Universal Unique Identifier
x400	An X.400 MHS format identifier
x500	An X.500 directory name

† - Australian extensions to table 0301.

Note: X400, X500, and DNS are not technically universally valid for all time. Names can be de-registered from an existing user and registered to a new user.

Examples:

The usual Universal ID type in Australian Pathology is AUSNATA

ACME Pathology^2184^AUSNATA

Alternatively when SMD is used the HPI-O can be used as follows

ACME Pathology^1.2.36.1.2001.1003.0.8003621566684455^ISO

Universal ID examples with only the 2nd and 3rd components valued:

^1.2.344.24.1.1.3^ISO

A HD consisting only of an ISO UID.

^1.2.34.4.1.5.1.5.1,1.13143143.131.3131.1^ISO

The syntax of the second component is defined by the ISO standard for object identifiers, not by HL7 (for which the second component is of the ST data type). Thus the periods (".") and comma (",") in the second component are part of the ISO syntax, but are legal by the definition of the HL7 ST data type.

^14344.14144321.4122344.14434.654^GUID

^falcon.iupui.edu^DNS

An internet example

^40C983F09183B0295822009258A3290582^RANDOM

An example of a RANDOM UID

Local examples:

LAB1

Local use only: a HD that looks like an IS data type

PathLab^PL.UCF.UC^L

The 'PathLab' application is identified by the namespace component but it is also identified by the 2nd and 3rd components, (i.e., by the locally-defined UID system "L"). The two identifiers are equivalent.

This is a more complex HD in which the middle component, which is locally defined, is itself structured. As with the ISO example above, the middle component's structure is not defined by HL7 but by the site according to its own needs: the only requirement is that the middle component's structure is allowed by the HL7 string (ST) data type.

RX.PIMS.SystemB.KP.CA.SCA

Local use only: a HD that looks like an IS data type. Again, note that the syntax of the first component is not defined by HL7 but by the site according to its own needs: the only requirement is that the first component's structure is allowed by the HL7 string (ST) data type, which is used for values by the IS data type.

^RX.PIMS.SystemB.CA.SCA^M

An alternate way to encode the previous example, illustrating the use of the third component value of "M" (see HL7 Table 0301 - Universal ID type (see page 161)) to identify a locally-defined identifier set. The second component has the same value as the previous example but is now defined to be a member of a set of allowable values defined by a site for the identifier set "M".

Examples containing both local and universal ID types:

LAB1^1.2.3.3.4.6.7^ISO

A HD with an ISO “object Identifier” as a UID and a locally defined system name. Both the first component and the second and third (taken together) refer to the same entity. This example shows that the local value and the universal ID value may be transmitted with a single HD field.

3.15 ID - coded value for HL7 defined tables

The value of such a field follows the formatting rules for an ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types. An examples of an ID field is OBR-25-result status. This data type should be used only for HL7 tables. The reverse is not true, since in some circumstances it is more appropriate to use the CE data type (see page 141)for HL7 tables.

3.16 IS - coded value for user-defined tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a site defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types.

This data type should be used only for user-defined tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables as it allows the text related to the code to be transmitted.

3.17A MA - multiplexed array

<sample 1 from channel 1>^<sample 1 from channel 2>^<sample 1 from channel 3> ...~
<sample 2 from channel 1>^<sample 2 from channel 2>^<sample 2 from channel 3> ...~
...

Definition: This data type is used to represent channel-multiplexed waveform data, (e.g., the digitized values from an analog-to-digital converter or other digital data source). Each value is of type NM, and represents a time sample from a channel. This segment may contain data from one or more channels. The waveform data is in channel-multiplexed format (that is, the values for all channels for the first time sample are transmitted, then the values for the next time sample, and so on until the requisite number of time samples have been transmitted). Time samples are separated by repeat delimiters (~), and channels within a sample are separated by component delimiters (^). The time between samples (the sampling interval) is the reciprocal of the digitization frequency as specified using the CD data type.

Examples:
|0^0^0~1^1^1~2^2^2~3^3^3~4^4^4~5^5^5| 3 channels (identical), 5 time-samples

|0~1~2~3~4~5~6~7~8~9~10| 1 channel, 11 time-samples

3.17 NA - numeric array

This data type is used to represent a series (array) of numeric values, each one having a data type of NM.

<value1> ^ <value2> ^ <value3> ^ <value4> ^ ...

Definition: This data type is used to represent a series (array) of numeric values, each one having a data type of NM. A field of this type may contain a one-dimensional array (vector or row) of numbers. Also, by allowing the field to repeat, a two-dimensional array (table) of numbers may be transmitted using this format, with each row of the table represented as one repetition of the field. Arrays which have one or more values not present may be

transmitted using this data type. “Not present” values are represented as two adjacent component delimiters. If the absent values occur at the end of a row, the trailing component delimiters may be omitted. If an entire row of a table has no values, no component delimiters are necessary (in this case, there will be two adjacent repetition delimiters). The maximum number of values in one repetition of an NA format field is determined by the maximum field length.

Examples:
|125^34^-22^-234^569^442^-212^6| vector of 8 numbers

|1.2^-3.5^5.2~2.0^3.1^-6.2~3.5^7.8^-1.3| 3 x 3 array of numbers

|^2^3^4~5^^^8~9^10~~17^18^19^20| 5 x 4 array of numbers with the values in positions (1,1), (2,2), (2,3), (3,3), (3,4), (4,1), (4,2), (4,3), and (4,4) not present

3.18 NM - numeric

A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive.

If there is no decimal point the number is assumed to be an integer.

Examples:

|999|

|-123.792|

Leading zeros, or trailing zeros after a decimal point, are not significant. For example, the following two values with different representations, “01.20” and “1.2”, are identical. Except for the optional leading sign (+ or -) and the optional decimal point (.), no non-numeric ASCII characters are allowed. Thus, the value <12 should be encoded as a structured numeric (SN) (preferred) or as a string (ST) (allowed, but not preferred) data type.

Note: In the Australian context numeric results should be transmitted using OBX-2 data types of NM or SN and not ST or FT.

3.19 PL - person location

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ < location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Note: This data type contains several location identifiers that should be thought of in the following order from the most general to the most specific: facility, building, floor, point of care, room, bed.

Additional data about any location defined by these components can be added in the following components: person location type, location description and location status.

This data type is used to specify a patient location within a healthcare institution. Which components are valued depends on the needs of the site. For example for a patient treated at home, only the person location type is valued. It is most commonly used for specifying patient locations, but may refer to other types of persons within a healthcare setting.

Example: Nursing Unit

A nursing unit at Community Hospital: 4 East, room 136, bed B

4E^136^B^CommunityHospital^^N^^^

Example: Clinic

A clinic at University Hospitals: Internal Medicine Clinic located in the Briones building, 3rd floor.

InternalMedicine^^^UniversityHospitals^^C^Briones^3^

Example: Home

The patient was treated at his home.

^^^^^H^^^

3.19.1 Point of care (IS)

Conditional on person location type (e.g., nursing unit or department or clinic). After floor, most general patient location designation. User-defined Table 0302 - Point of care is used as the HL7 identifier for the user-defined table of values for this component.

User-defined Table 0302 – Point of care

Value	Description
	No suggested values defined

3.19.2 Room (IS)

Patient room. After point of care, most general person location designation. User-defined Table 0303 - Room is used as the HL7 identifier for the user-defined table of values for this component.

User-defined Table 0303 – Room

Value	Description
	No suggested values defined

3.19.3 Bed (IS)

Patient bed. After room, most general person location designation. User-defined Table 0304 - Bed is used as the HL7 identifier for the user-defined table of values for this component.

User-defined Table 0304 – Bed

Value	Description
	No suggested values defined

3.19.4 Facility (HD)

Subject to site interpretation but generally describes the highest level physical designation of an institution, medical centre or enterprise. Most general person location designation. (See HD - hierarchic designator (see page 159)) for discussion of data type.

Note: When the HD data type is used in a given segment as a component of a field of another data type, User-defined Table 0300 - Namespace ID (see page 160) (referenced by the first sub-component of the HD component) may

be redefined (given a different user-defined table number and name) by the technical committee responsible for that segment.

3.19.5 Location status (IS)

Location (e.g., Bed) status. User-defined Table 0306 - Location status is used as the HL7 identifier for the user-defined table of values for this component.

User-defined Table 0306 – Location status

Value	Description
	No suggested values defined

3.19.6 Person location type (IS)

Person location type is the categorization of the person's location defined by facility, building, floor, point of care, room or bed. Although not a required field, when used, it may be the only populated field. Usually includes values such as nursing unit, department, clinic, SNF, physician's office. User-defined Table 0305 - Person location type (see page 166) is used as the HL7 identifier for the user-defined table of values for this component.

User-defined Table 0305 – Person location type

Value	Description
C	Clinic
D	Department
H	Home
N	Nursing Unit
O	Provider's Office
P	Phone
S	SNF

3.19.7 Building (IS)

After facility, most general person location designation. User-defined Table 0307 - Building is used as the HL7 identifier for the user-defined table of values for this component.

User-defined Table 0307 – Building

Value	Description
	No suggested values defined

3.19.8 Floor (IS)

After building, most general person location designation. User-defined Table 0308 - Floor is used as the HL7 identifier for the user-defined table of values for this component.

User-defined Table 0308 – Floor

Value	Description
	No suggested values defined.

3.19.9 Location description (ST)

A free text description of the location.

3.20 RP - reference pointer

Components: <pointer (ST) > ^ < application ID (HD)> ^ <type of data (ID)> ^ <subtype (ID)>

This data type transmits information about data stored on another system. It contains a reference pointer that uniquely identifies the data on the other system, the identity of the other system, and the type of data.

3.20.1 Pointer (ST)

A unique key assigned by the system that stores the data. The key, which is a ST data type, is used to identify and access the data.

3.20.2 Application ID (HD)

Subcomponents: <namespace ID (IS)> & < universal ID (ST)> & <universal ID type (ID)>

A unique designator of the system that stores the data. It is a HD data type (See HD - hierarchic designator (see page 159)). Application ID's must be unique across a given HL7 implementation.

3.20.3 Type of data (ID)

An ID data type that declares the general type of data. Refer to HL7 Table 0191 - Type of referenced data (see page 167) for valid values.

HL7 Table 0191 - Type of referenced data
Example field: OBX-5.3 Observation Value => Type of Data

Value	Description
AP	Other application data, typically uninterpreted binary data (HL7 V2.3 and later)
AU	Audio data (HL7 V2.3 and later)

Value	Description
FT	Formatted text (HL7 V2.2 only)
IM	Image data (HL7 V2.3 and later)
multipart	MIME multipart package
NS	Non-scanned image (HL7 V2.2 only)
SD	Scanned document (HL7 V2.2 only)
SI	Scanned image (HL7 V2.2 only)
TEXT	Machine readable text document (HL7 V2.3.1 and later)
TX	Machine readable text document (HL7 V2.2 only)
application	Imported from IANA MIME Types updated 2016-09-27
audio	Imported from IANA MIME Types updated 2016-09-27
example	Imported from IANA MIME Types updated 2016-09-27
image	Imported from IANA MIME Types updated 2016-09-27
message	Imported from IANA MIME Types updated 2016-09-27
model	Imported from IANA MIME Types updated 2016-09-27
text	Imported from IANA MIME Types updated 2016-09-27
video	Imported from IANA MIME Types updated 2016-09-27

MIME types are imported from:
http://www.iana.org/assignments/media-types/media-types.xhtml
An ID data type declaring the format for the data of subcomponent <main type>. Refer to HL7 Table 0291-Subtype of referenced data (see page 168) for valid values.

3.20.4 Subtype (ID)

HL7 Table 0291—Subtype of Referenced Data

Example field: OBX-5.4 Observation Value => Type of Data

Value	Description
BASIC	ISDN PCM audio data
DICOM	Digital Imaging and Communications in Medicine
FAX	Facsimile data
GIF	Graphics Interchange Format
HTML	Hypertext Markup Language
JOT	Electronic ink data (Jot 1.0 standard)
JPEG	Joint Photographic Experts Group
Octet-stream	Uninterpreted binary data
PICT	PICT format image data
PostScript	PostScript program
RTF	Rich Text Format
SGML	Standard Generalized Markup Language (HL7 V2.3.1 and later)
TIFF	TIFF image data
x-hl7-cda-level-one	HL7 Clinical Document Architecture Level One document
XML	Extensible Markup Language (HL7 V2.3.1 and later)

Value	Description
pdf	Portable Document Format MIME type: application/pdf[48] [RFC3778[49]]
png	Portable Network Graphics MIME type: image/png[50] [RFC2083[51]]
xml	text/xml[52] [RFC7303[53]] or application/xml[54] [RFC7303[55]]
emf	image/emf [[56]RFC-seantek-windows-image-03[57]][58]

Other MIME subtypes types can be imported from:

http://www.iana.org/assignments/media-types/media-types.xhtml

When this component is valued with a MIME <Subtype (ID)> value, then the corresponding MIME type must be used in the <Type of data (ID)> component.

When this component is valued with a HL7 2.4 defined <Subtype (ID)> (HL7 Table 0291- Subtype of referenced data (see page 168)) value, then the corresponding HL7 2.4 type of data (HL7 Table 0191 - Type of referenced data (see page 167)) must be used in the <Type of data (ID)> component.

3.20.5 Type-subtype combinations

Possible subtypes are specific to main types (though in principle the same subtype could be used for more than one main type), and so are defined under their main types.

Additional subtypes may be added to this Standard. In addition, private, non-standard subtypes may be defined by agreement between cooperating parties. All private, non-standard subtypes should begin with the letter **Z** to distinguish them from the standard subtypes.

3.20.5.1 Image subtypes

TIFF = TIFF image data

TIFF (Tagged Image File Format) is one of the common formats for scanned images. Its first version was developed in 1986 by Aldus Corporation as a standard for encoding scanned images. The official version of the TIFF standard is now maintained by Adobe Corporation. TIFF format is specified in the document “TIFF, Revision 6.0.” Adobe Systems Incorporated, 1585 Charleston Road, P.O. Box 7900, Mountain View, CA 94039-7900. (415) 961-4400 The subtype “TIFF” implies recognition of that trademark and all the rights it entails.

PICT = PICT format image data

48 http://www.iana.org/assignments/media-types/application/pdf
49 http://www.iana.org/go/rfc3778
50 http://www.iana.org/assignments/media-types/image/png
51 https://tools.ietf.org/html/rfc2083
52 http://www.iana.org/assignments/media-types/text/xml
53 http://www.iana.org/go/rfc7303
54 http://www.iana.org/assignments/media-types/application/xml
55 http://www.iana.org/go/rfc7303
56 http://www.iana.org/assignments/media-types/image/emf
57 http://www.iana.org/go/draft-seantek-windows-image-03
58 http://www.iana.org/assignments/media-types/image/emf

PICT is one of the common formats for scanned images. PICT is a graphics format developed by Apple Computer, Inc., Cupertino, California. PICT format is officially defined in the book set “Inside Macintosh,” published by Addison-Wesley Publishing Company, Reading, Massachusetts.

DICOM = the Digital Imaging and Communications in Medicine (DICOM) standard

DICOM is the format developed jointly by the American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA) as the standard for interchange of radiological images and ancillary data. It is standardized as NEMA PS3, and is available from: NEMA, 2101 L Street NW, Washington, DC 20037.

DICOM specifies a complete communications standard, including a generic messaging service for two-way exchange of imaging-related information between applications, as well as transfer of the actual images. In HL7, the use of DICOM data is limited to images only.

Images in this subtype shall be encoded according to the Generic DICOM File Format defined in DICOM Part 10, Media Storage and File Format (NEMA PS3.10). This shall be in accordance with the Image Information Object Definitions of DICOM Part 3 (NEMA PS3.3), Data Structure and Semantics of DICOM Part 5 (NEMA PS3.5), and the Data Dictionary of DICOM Part 6 (NEMA PS3.6).

The Generic DICOM File Format consists of two parts: a DICOM File Meta Information Header, immediately followed by a DICOM Data Set. The DICOM Data Set contains the image or images specified according to DICOM Part 10. The DICOM File Meta Information Header contains, among other information, a Transfer Syntax UID (Unique Identifier) which completely specifies the encoding of the Data Set according to DICOM Part 5. This encoding defines big endian vs. little endian byte ordering, as well as image compression via the JPEG (Joint Photographics Experts Group) standard (ISO/IS 10918-1 and 10918-2). The transfer syntax of the File Meta Information Header itself is little endian byte ordered, as required by DICOM Part 10.

FAX = facsimile data

Facsimile data as specified by CCITT standards F1.60, F1.80, F1.82, and F1.84.

Jot = electronic ink data, as specified by the Jot 1.0 standard

The JOT standard, proposed jointly by Slate Corporation, Microsoft, Apple, Lotus, GO, and General Magic, allows handwritten notes, sketches, signatures and other free-form written data to be transmitted. It is the standard by which portable pen computers or workstations equipped with stylus-input tablets can represent and exchange information.

It represents electronic ink as a series of stylus strokes, and therefore contains necessary information for potential automatic handwriting recognition, which would be lost if converted to other image representations. It may, however, be readily converted to another image representation for purposes of printing or display.

The JOT 1.0 standard is available from: Software Publishers Association, 1730 M Street Northwest, Suite 700 Washington, DC 20036-4510, (202) 452-1600

3.20.5.2 Audio subtypes

basic = ISDN PCM audio data

Telephone quality audio data, encoded as 8-bit ISDN mu-law Pulse Code Modulation sampled at 8 kHz, according to CCITT Fascicle III.4, Recommendation G.711. This subtype may be used for voice mail messages as well as voice dictation.

3.20.5.3 Application subtypes

octet-stream = uninterpreted binary data

This subtype is for binary data which has none of the other standard formats as given by Section 3.20.3, “Type of data (ID)”. Its interpretation by the system utilizing the data must be mutually agreed upon by sending and receiving parties.

PostScript = PostScript program

A PostScript language program typically representing a formatted document for printing on a PostScript printer, or for display on a computer screen via a PostScript interpreter. PostScript consists of the original specification, PostScript level 1, described in “PostScript Language Reference Manual,” Addison-Wesley, 1985, and a more advanced variant, PostScript level 2, described in “PostScript Language Reference Manual,” Addison-Wesley, Second Edition, 1990. PostScript is a registered trademark of Adobe Systems, Inc. Use of the subtype “PostScript” implies recognition of that trademark and all the rights it entails.

Other types may be added as needed.

Example:

|1234A321634BC^EFC^SD|

3.21 SI - sequence ID

A non-negative integer in the form of a NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it appears.

3.22 SN - structured numeric

Components: <comparator (ST)> ^ <num1 (NM)> ^ <separator/suffix (ST)> ^ <num2 (NM)>

The structured numeric data type is used to unambiguously express numeric clinical results along with qualifications. This enables receiving systems to store the components separately, and facilitates the use of numeric database queries. The corresponding sets of values indicated with the <comparator> and <separator/suffix> components are intended to be the authoritative and complete set of values. If additional values are needed for the <comparator> and <separator/suffix> components, they should be submitted to HL7 for inclusion in the Standard.

If <num1> and <num2> are both non-null, then the separator/suffix must be non-null. If the separator is “-”, the data range is inclusive; e.g., <num1> - <num2> defines a range of numbers x, such that: <num1> <=x<= <num2>.

3.22.1 Comparator (ST)

Defined as greater than, less than, greater than or equal, less than or equal, equal, and not equal, respectively (= “>” or “<” or “>=” or “<=” or “=” or “<>”

If this component is not valued, it defaults to equal (“=”).

3.22.2 Num1 (NM)

A number.

3.22.3 Separator/suffix (ST)

“-” or “+” or “/” or “.” or “:”

Examples:

|>^100| (greater than 100)

|^100^-^200| (equal to range of 100 through 200)

|^1^:^128| (ratio of 1 to 128, e.g., the results of a serological test)

|^2^+| (categorical response, e.g., occult blood positivity)

3.22.4 Num2 (NM)

A number or null depending on the measurement.

3.23 ST - string data

String data is left justified with trailing blanks optional. Any displayable (printable) ACSII characters (hexadecimal values between 20 and 7E, inclusive, or ASCII decimal values between 32 and 126), except the defined escape characters and defined delimiter characters. Example: |almost any data at all|

To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence.

Usage note: The ST data type is intended for short strings (e.g., less than 50 characters). For longer strings the FT data types should be used.

The ST data should use the same character set as specified in the message header and not use alternative character sets.

3.24 TM - time

Format: HH[MM[SS[.S[S[S[S]]]]]][+/-ZZZZ]

In prior versions of HL7, this data type was always specified to be in the format HHMM[SS[.SSSS]][+/-ZZZZ] using a 24 hour clock notation. In the current and future versions, the precision of a time should be expressed by limiting the number of digits used with the format specification as shown above. By site specific agreement, HHMM[SS[.SSSS]][+/-ZZZZ] may be used where backward compatibility must be maintained.

Thus, HH is used to specify a precision of “hour,” HHMM is used to specify a precision of “minute,” HHMMSS is used to specify a precision of seconds, and HHMMSS.SSSS is used to specify a precision of ten-thousandths of a second.

In each of these cases, the time zone is an optional component. The fractional seconds could be sent by a transmitter who requires greater precision than whole seconds. Fractional representations of minutes, hours or other higher-order units of time are not permitted.

Note: The time zone [+/-ZZZZ], when used, is restricted to legally-defined time zones and is represented in HHMM format.

The time zone of the sender may be sent optionally as an offset from the coordinated universal time (previously known as Greenwich Mean Time). Where the time zone is not present in a particular TM field but is included as part of the date/time field in the MSH segment, the MSH value will be used as the default time zone. Otherwise, the time is understood to refer to the local time of the sender. Midnight is represented as 0000. Examples:

|235959+1100| 1 second before midnight in a time zone eleven hours ahead of Universal Coordinated Time (i.e., east of Greenwich).

|0800| Eight AM, local time of the sender.

|093544.2312| 44.2312 seconds after Nine thirty-five AM, local time of sender.

|13| 1pm (with a precision of hours), local time of sender.

3.25 TQ - timing quantity

Describes when a service should be performed and how frequently.

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: *Quantity/timing (ORC-7, OBR-27)* provides a means of specifying when the service described by the order segment is to be performed and how frequently. It is a complex multicomponent field that can have repeats; i.e., more than one quantity/timing specification, separated by repeat delimiters, may appear. It is a distinct data type. The components of a single quantity/timing specification are described here.

3.25.1 Quantity component (CQ)

Subcomponents: <quantity (NM) & units (CE)>

Definition: This field specifies the quantity of the service that should be provided at each service interval.

For example, if two blood cultures are to be obtained every 4 hours, the quantity would be 2. If three units of blood are to be typed and cross-matched, the quantity would be 3. The default value is 1. When units are required, they can be added, specified by a subcomponent delimiter.

Note: The component delimiter in this CQ is demoted to a subcomponent delimiter.

3.25.2 Interval component (CM)

Subcomponents: <repeat pattern (IS)> & <explicit time interval (ST)>

Definition: This field determines the interval between repeated services. The default is one time only, the first subcomponent is the repeat pattern, and the second subcomponent is the explicit time at which pattern is to be executed.

Note: The component delimiter in this CQ is demoted to a subcomponent delimiter.

3.25.2.1 Repeat pattern

Definition: The repeating frequency with which the treatment is to be administered. It is similar to the frequency and SIG code tables used in order entry systems. The following is preferred syntax for repeat patterns:

User-defined Table 0335 - Repeat pattern

Value	Description
Q<integer>S	every <integer> seconds
Q<integer>M	every <integer> minutes
Q<integer>H	every <integer> hours

Value	Description
Q<integer>D	every <integer> days
Q<integer>W	every <integer> weeks
Q<integer>L	every <integer> months (Lunar cycle)
Q<integer>J<day#>	repeats on a particular day of the week, from the French *jour* (day). If <integer> is missing, the repeat rate is assumed to be 1. Day numbers are counted from 1=Monday to 7=Sunday. So Q2J2 means every second Tuesday; Q1J6 means every Saturday.
BID	twice a day at institution-specified times (e.g., 9AM-4PM)
TID	three times a day at institution-specified times (e.g., 9AM-4PM-9PM)
QID	four times a day at institution-specified times (e.g., 9AM-11AM-4PM-9PM)
xID	“X” times per day at institution-specified times, where X is a numeral 5 or greater. E.g., 5ID=five times per day; 8ID=8 times per day
QAM	in the morning at institution-specified time
QSHIFT	during each of three eight-hour shifts at institution-specified times
QOD	every other day (same as Q2D)
QHS	every day before the hour of sleep
QPM	in the evening at institution-specified time
C	service is provided continuously between start time and stop time
U <spec>	for future use, where <spec> is an interval specification as defined by the UNIX cron specification.
PRN	given as needed
PRNxxx	where xxx is some frequency code (e.g., PRNQ6H); given as needed over the frequency period.
Once	one time only. This is also the default when this component is null.

Value	Description
Meal Related Timings	<timing>C (“cum”)<meal>
A	Ante (before)
P	Post (after)
I	Inter (e.g., between this meal and the next, between dinner and sleep
M	Cibus Matutinus (breakfast)
D	Cibus Diurnus (lunch)
V	Cibus Vespertinus (dinner)

The first subcomponent may repeat, with repeat values separated by a space. The repeats are interpreted as connected by logical ANDs.

E.g., Twice per day, every other day: BID QOD

Three times per day, Monday Wednesday and Friday: TID QJ135

Because of this syntax, repeat values should never contain blanks. If a free text frequency, such as “Twice a day, every other day” is to be sent, use the text component (component 8).

3.25.2.2 Explicit time interval

Definition: This field explicitly lists the actual times referenced by the code in the first subcomponent, in the following format: HHMM,HHMM,HHMM,…. This second subcomponent will be used to clarify the first subcomponent in cases where the actual administration times vary within an institution. If the time of the order spans more than a single day, this new subcomponent is only practical if the same times of administration occur for each day of the order. If the actual start time of the order (as given by the fourth subcomponent of the quantity/timing field) is after the first explicit time, the first administration is taken to be the first explicit time after the start time. In the case where the patient moves to a location having a different set of explicit times, the existing order may be updated with a new quantity/timing field showing the changed explicit times.

Ex: 2nd component of quantity/timing field: ...^QID&0230,0830,1430,2030^...

3.25.3 Duration component (ST)

Definition: This field indicates how long the service should continue after it is started. The default is INDEF (do indefinitely). This component is coded as follows:

S<integer> = <integer> seconds

M<integer> = <integer> minutes

H<integer> = <integer> hours

D<integer> = <integer> days

W<integer> = <integer> weeks

L<integer> = <integer> months

X<integer> = <integer> times at interval specified in the order. A request for 2 blood cultures Q2H X3 would imply obtaining 2 blood cultures 3 different times at 2-hour intervals for a total of 6 blood cultures.

T<integer> = at the interval and amount stated until a total of <integer> “DOSAGE” is accumulated. Units would be assumed to be the same as in the QUANTITY field.

INDEF **=** do indefinitely - also the default

3.25.4 Start date/time component (TS)

Definition: This field may be specified by the orderer, in which case it indicates the earliest date/time at which the services should be started. In many cases, however, the start date/time will be implied or will be defined by other fields in the order record (e.g., urgency - STAT). In such a case, this field will be empty.

The filling service will often record a value in this field after receipt of the order, however, and compute an end time on the basis of the start date/time for the filling service’s internal use.

3.25.5 End date/time component (TS)

Definition: When filled in by the requester of the service, this field should contain the latest date/time that the service should be performed. If it has not been performed by the specified time, it should not be performed at all. The requester may not always fill in this value, yet the filling service may fill it in on the basis of the instruction it receives and the actual start time.

Regardless of the value of the end date/time, the service should be stopped at the earliest of the date/times specified by either the duration or the end date/time.

3.25.6 Priority component (ST)

Definition: This field describes the urgency of the request. The following values are suggested (the default for Priority is R):

S = Stat With highest priority

A = ASAP Fill after S orders

R = Routine Default

P = Preop

C = Callback

T = Timing critical A request implying that it is critical to come as close as possible to the requested time, e.g., for a trough antimicrobial level.

PRN = As needed

If using the value “T” (timing critical), the degree of criticality can be specified thus:

Format:

TS<integer> **=** timing critical within <integer> seconds

TM<integer> **=** timing critical within <integer> minutes

TH<integer> **=** timing critical within <integer> hours

TD<integer> **=** timing critical within <integer> days

TW<integer> **=** timing critical within <integer> weeks

TL<integer> **=** timing critical within <integer> months

For the sequential orders specification, these values specify the time criticality with which the predecessor order must be followed by the given order.

The priority component may repeat; separate repeating values with a space.

3.25.7 Condition component (ST)

Definition: This is a free text field that describes the conditions under which the drug is to be given. For example,

PRN pain , or **to keep blood pressure below 110** . The presence of text in this field should be taken to mean that human review is needed to determine the how and/or when this drug should be given.

3.25.8 Text component (TX)

Definition: This field is a full text version of the instruction (optional).

3.25.9 Conjunction component (ID)

Definition: This non-null component indicates that a second timing specification is to follow using the repeat delimiter. This field can take three values as shown in HL7 table 0472 - TQ Conjunction ID.

HL7 table 0472 - TQ Conjunction ID

Value	Description
S	Synchronous. Do the next specification after this one (unless otherwise constrained by the following components: *ORC-7^4-*start date/time and *ORC-7^5-end date/time*). An “S” specification implies that the second timing sequence follows the first, e.g., when an order is written to measure blood pressure Q15 minutes for the 1st hour, then every 2 hours for the next day.
A	Asynchronous Do the next specification in parallel with this one (unless otherwise constrained by the following components: *ORC-7^4-* start date/time and *ORC-7^5-end date/time*). The conjunction of “A” specifies two parallel instructions, as are sometimes used in medication, e.g., prednisone given at 1 tab on Monday, Wednesday, Friday, and at 1/2 tab on Tuesday, Thursday, Saturday, Sunday.

Value	Description
C	This is an actuation time It will be followed by a completion time for the service. This code allows one to distinguish between the time and priority at which a service should be actuated (e.g., blood should be drawn) and the time and priority at which a service should be completed (e.g., results should be reported). For continuous or periodic services, the point at which the service is actually stopped is determined by the components ORC-7^5-end date/time and *ORC-7^3-duration* , whichever indicates an earlier stopping time. Ordinarily, only one of these components would be present, but if one requested an EKG with the specification ^1^QAM^X3^D10 then the EKG would be done for only three days since the number of repeats (3) defined the earlier stopping time.

3.25.10 Order sequencing component (CM)

Definition: There are many situations, such as the creation of an order for a group of intravenous (IV) solutions, where the sequence of the individual intravenous solutions (each a service in itself) needs to be specified, e.g., hyperalimentation with multi-vitamins in every third bottle.

There are other situations where part of the order's instructions contains a results condition of some type, such as "PRN pain." There is currently a free text "condition" component of *ORC-7-quantity/timing* which allows any condition to be specified. However, to support a fully encoded version of order sequencing, or results condition, we have defined in the following paragraphs a 10th component of *ORC-7*-quantity/timing.

The sequencing conditions supported by this 10th component are based on the completion of a predecessor service.

3.25.10.1 Subcomponents of sequences

To define a sequence condition, the 10th component of the quantity/timing field component is divided into the subcomponents described in Figure 3-2.

Figure 3-2. Subcomponents of order sequences

Subcomponent	Contains	Notes
1	Sequence/Results Flag	S for sequence conditions; C for cyclical; R is reserved for possible future use. The C will be used for indicating a repeating cycle of orders; for example, individual intravenous solutions used in a cyclical sequence (a.k.a. "Alternating IVs"). This value would be compatible with linking separate orders or with having all cyclical order components in a single order. Likewise, the value would be compatible with either Parent-Child messages or a single order message to communicate the orders' sequencing.

Subcomponent	Contains	Notes
2, 3	Placer Order Number, first two components	Required/Optional: Contains the first two components of the placer order number: entity identifier (ST) and *namespace ID* (IS) (respectively). Uses two subcomponents since the placer order number is an EI data type. We have not defined sub-subcomponents in HL7.
4, 5	Filler Order Number, first two components	Required/Optional: Contains the first two components of the filler order number: entity identifier (ST) and *namespace ID* (IS) (respectively). Uses two subcomponents since the filler order number is an EI data type. We have not defined sub-subcomponents in HL7.
6	Sequence Condition Value	The acceptable condition values have the form commonly used in project planning methodologies: <one of “SS”, “EE”, “SE”, or “ES”> +/- <time> The first letter stands for start (S) or end (E) of predecessor order, where the predecessor is defined by the placer or filler order number in subcomponents 1,2 or subcomponents 3,4. The second letter stands for the start (S) or end (E) of the successor order, where the successor order is the order containing this quantity/timing specification. The time specifies the interval between the predecessor and successor starts or ends (see following examples). Where <time> is defined as: S<integer> do for <integer> seconds M<integer> do for <integer> minutes H<integer> do for <integer> hours D<integer> do for <integer> days W<integer> do for <integer> weeks L<integer> do for <integer> months
7	Maximum Number of Repeats	The maximum number of repeats to be used only on cyclic groups. The total number of repeats is constrained by the end date/time of the last repeat or the end date/time of the parent, whichever is first.
8, 9	Placer Order Number, last two components	Required/Optional: Contains the last two components of the placer order number: universal ID (ST) and *universal ID type* (ID) (respectively). Uses two subcomponents since the placer order number is an EI data type. We have not defined sub-subcomponents in HL7.

Subcomponent	Contains	Notes
10, 11	Filler Order Number, last two components	Required/Optional: Contains the last two components of the filler order number: universal ID (ST) and *universal ID type* (ID) (respectively). Uses two subcomponents since the filler order number is an EI data type. We have not defined sub-subcomponents in HL7.

Use notes:

Suppose the following:

The predecessor order is defined by the OE1000&OrdEnt as the placer order number, in subcomponents 2 and 3 of component 10 of *ORC-7-quantity/timing* .

The successor order, this order, has the placer order number OE1001^OrdEnt in the ORC segment.

The following sequence condition values have the following meanings:

ES + 10M	The finish time of OE1000&OrdEnt (predecessor) plus 10 minutes defines the start time of the successor, OE1001^OrdEnt (this order); i.e., start this order 10 minutes after the completion of its predecessor.
SS - 10M	The start time of the predecessor minus 10 minutes defines the start time of this order; i.e., start this order 10 minutes before its predecessor.

3.25.10.2 Cyclic placer order groups

For the special case where there is a cycle of orders that must be repeated, the first order to be executed will have a “sequence condition value” whose first character must be an asterisk (*). The last order to be executed may have a “sequence condition value” whose first character must be a pound sign (#).

Example:

*FS + 10M	translates to: execute this order the first time without evaluating the condition specified in the 10th component; but repeat only its execution when the specified external order’s start or finish date/ time has met this condition. This specification generates a repetition of the order for each iteration of the cycle.

Note: This requires that the ordering application be able to specify the placer order number of the last order in the cycle in the first order’s quantity/timing specification.

To implement a cyclic group of four IV orders using the parent/child paradigm, the parent specifies a custom group of IVs, and the following occurs:

ORC-7-quantity/timing of the second child order specifies that it follows the first child order.

ORC-7-quantity/timing of the third child order specifies that it follows the second child order.

ORC-7-quantity/timing of the fourth child order specifies that it follows the third order.

To repeat the group of four child orders in a cyclic manner, the following occurs:

ORC-7-quantity/timing of the first child order specifies that it is to be executed once without any dependence on the completion of other orders.

Its second execution follows the completion of the fourth order. See example in HL7 International v2.4 Section 4.15.2, “RXO segment field examples

This scheme allows the following to be tracked:

The status of the whole group of orders to be reported back at the level of the parent order.

The status for each individual IV order by following the status of the corresponding child order.

Separate Orders example:

The same group of orders can be sent as a group of four orders (without a common parent), linked only by the data in their quantity/timing fields. In this case, there is no convenient HL7 method of transmitting the order status of the group as a whole without transmitting the status of each of the four separate orders.

3.25.10.3 Inheritance of order status

Cancellation/discontinuation/hold order control events:

This logic implies the normal execution of the referenced predecessor order. Thus a cancel (or discontinuation or hold) of a predecessor order implies the cancellation (or discontinuation or hold) of all subsequent orders in the chain.

If the referenced order has been cancelled (or discontinued or held), the current order inherits that same status.

In the case of hold, the removal of the hold of the predecessor implies a removal of the hold for the given order (which can then be executed according to the specification in the 10th component).

3.25.11 Occurrence duration component (CE))

Subcomponents: <identifier (ST)> & <text (ST)> & <name of coding system (IS)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system>

Definition: This field contains the duration for a single performance of a service, e.g., whirlpool twenty minutes three times per day for three days. It is optional within TQ and does not repeat.

Note: The component delimiter in this CQ is demoted to a subcomponent delimiter.

3.25.12 Total occurrences component (NM))

Definition: This field contains the total number of occurrences of a service that should result from this order. It is optional within TQ and does not repeat. If both the end date/time and the total occurrences are valued and the occurrences would extend beyond the end date/time, then the end date/time takes precedence. Otherwise the number of occurrences takes precedence.

3.25.13 Examples of quantity/timing usage

3^Once

Perform the service at one point in time, e.g., order 3 units of blood to be given once.

1^QHS^X2

Perform the service twice at bedtime, e.g., give a unit of blood at bedtime on two sequential nights.

1^C^D3

Do a service continuously for 3 days.

1^Q1H^X4^^^^PVCs>10/min

Perform an EKG every hour up to a maximum of 4 EKGs, if patient is having more than 10 PVCs per minute.

1^Q1J2^^200005231432

Perform a service every Tuesday at 2:32 p.m. starting on 05/23/2000.

1^^^^198911210800

Perform a test before 11/21/89 0800, e.g., some preop laboratory tests.

1^Q1H^X5^198911051030

Perform a service every hour for 5 hours starting at 10:30 a.m. 11/5/89, e.g., draw a blood glucose.

1^QAM^X3^^^^^^S~1^QOD^D4^^^^if K+>5.5

Perform a service every morning for 3 days and then do it every other day for 4 days (i.e., max twice) if the serum potassium is greater than 5.5.

^^^198812120800^^T^^Trough specimen for MIC^C~^^^^^R

The first repeat instructs to draw a blood specimen exactly at 8:00 a.m. on 12/12/1988. The second repeat specifies to report results routinely.

1^QD^D7^^^^^^^^M20

Whirlpool ankle for twenty minutes once a day for one week.

1^^^19990301^19990331^^^^^^H1^3

Three one hour home health nursing visits within the next month.

3.26 TS - time stamp

Format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Contains the exact time of an event, including the date and time. The date portion of a time stamp follows the rules of a date field and the time portion follows the rules of a time field. The time zone (+/-ZZZZ) is represented as +/-HHMM offset from UTC (formerly Greenwich Mean Time (GMT)), where +0000 or -0000 both represent UTC (without offset). The specific data representations used in the HL7 encoding rules are compatible with ISO 8824-1987(E).

In prior versions of HL7, an optional second component indicates the degree of precision of the time stamp (Y = year, L = month, D = day, H = hour, M = minute, S = second). This optional second component is retained only for purposes of backward compatibility and should not be used in Australia except by site agreement.

By site-specific agreement, YYYYMMDD[HHMM[SS[.S[S[S[S]]]]]][+/-ZZZZ]^<degree of precision> may be used where backward compatibility must be maintained.

In the current and future versions of HL7, the precision is indicated by limiting the number of digits used, unless the optional second component is present. Thus, YYYY is used to specify a precision of “year,” YYYYMM specifies a precision of “month,” YYYYMMDD specifies a precision of “day,” YYYYMMDDHH is used to specify a precision of “hour,” YYYYMMDDHHMM is used to specify a precision of “minute,” YYYYMMDDHHMMSS is used to specify a precision of seconds, and YYYYMMDDHHMMSS.SSSS is used to specify a precision of ten thousandths of a second. In each of these cases, the time zone is an optional component. Note that if the time zone is not included, the time zone defaults to that of the local time zone of the sender. Also note that a TS valued field with the HHMM part set to "0000" represents midnight of the night extending from the previous day to the day given by the YYYYMMDD part (see example below). Maximum length of the time stamp is 26.

If a precision of Hour or greater is used a time zone should be specified.

Examples:

|19760704010159-0500|

1:01:59 on July 4, 1976 in the Eastern Standard Time zone (USA).

|19760704010159-0400|

1:01:59 on July 4, 1976 in the Eastern Daylight Saving Time zone (USA).

|198807050000|

Midnight of the night extending from July 4 to July 5, 1988 in the local time zone of the sender.

|19880705|

Same as prior example, but precision extends only to the day. Could be used for a birthdate, if the time of birth is unknown.

|19981004010159+0100|

1:01:59 on October 4, 1998 in Amsterdam, NL. (Time zone=+0100).

The HL7 Standard strongly recommends that all systems routinely send the time zone offset but does not require it. All HL7 systems are required to accept the time zone offset, but its implementation is application specific. For many applications the time of interest is the local time of the sender. For example, an application in the Eastern Standard Time zone receiving notification of an admission that takes place at 11:00 PM in San Francisco on December 11 would prefer to treat the admission as having occurred on December 11 rather than advancing the date to December 12.

Note: The time zone [+/-ZZZZ], when used, is restricted to legally-defined time zones and is represented in HHMM format.

One exception to this rule would be a clinical system that processed patient data collected in a clinic and a nearby hospital that happens to be in a different time zone. Such applications may choose to convert the data to a common representation. Similar concerns apply to the transitions to and from daylight saving time. HL7 supports such requirements by requiring that the time zone information be present when the information is sent. It does not, however, specify which of the treatments discussed here will be applied by the receiving system.

3.27 VID – version identifier

Components: <version ID (ID)> ^ <internationalization code (CE)> ^ <international version ID (CE)

Refer to MSH-12 Version ID (VID) 00012 (see page 42).

3.27.1 Version ID (ID)

Used to identify the HL7 version. Refer to HL7 Table 0104 - Version ID (see page 42) for valid values.

3.27.2 Internationalization code (CE)

Used to identify the international affiliate country code. The values to be used are those of ISO 3166 - 1:1977. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code.

Refer to HL7 Table 0399 – Country code (see page 44) for the 3-character codes as defined by ISO 3166 table.

3.27.3 International version ID (CE)

This field component identifies international affiliate's version; it is especially important when the international affiliate has more than a single local version associated with a single US version.

3.28 XAD - extended address

Components: <street address (SAD)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)> ^ <address validity range (DR)>

Subcomponents of street address (SAD): <street or mailing address (ST)> & <street name (ST)> & <dwelling number (ST)>Subcomponents of address validity range (DR): <date range start date/time (TS)> & <date range end date/time (TS)>

Note: Replaces the AD data type as of v 2.3.

Length: 250

Example of usage for US:

|1234 Easy St.^Ste. 123^San Francisco^CA^95123^USA^B^^SF^|

This would be formatted for postal purposes as

1234 Easy St.

Ste. 123

San Francisco CA 95123

Example of usage for Australia:

|14th Floor^50 Paterson St^Coorparoo^QLD^4151|

This would be formatted for postal purposes using the same rules as for the American example as

14th Floor

50 Paterson St

Coorparoo QLD 4151

International note: Countries typically have a standard method of formatting addresses. This data type does not specify the formatting usages, only the components of a postal address.

3.28.1 Street address (SAD)

Components: <street or mailing address (ST)> ^ <street name (ST)> ^ <dwelling number (ST)>
Note: Appears ONLY in the XAD data type

Note that in the context of an XAD the delimiters of SAD must appear as & subcomponents. i.e. <street or mailing address (ST)> & <street name (ST)> & <dwelling number (ST)>

3.28.1.1 Street or mailing address (ST)

The street or mailing address of a person or institution. When referencing an institution, this first component is used to specify the institution name. When used in connection with a person, this component specifies the first line of the address.

3.28.1.2 Street name (ST)

3.28.1.3 Dwelling number (ST)

3.28.2 Other designation (ST)

Second line of address. In US usage, it qualifies address. Examples: Suite 555 or Fourth Floor. When referencing an institution, this component specifies the street address.

3.28.3 City (ST)

This may be the name of the city, or district or place depending upon the national convention for formatting addresses for postal usage.

3.28.4 State or province (ST)

State or province should be represented by the official postal service codes for that country.

3.28.5 Zip or postal code (ST)

Zip or postal codes should be represented by the official codes for that country. In the US, the zip code takes the form 99999[-9999], while the Canadian postal code takes the form A9A9A9, and the Australian Postcode takes the form 9999.

3.28.6 Country (ID)

Defines the country of the address. ISO 3166 provides a list of country codes that may be used. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic)form be used for the country code. HL7 Table 0399 – Country code (see page 44) is defined to contain these 3-character codes.

3.28.7 Address type (ID)

Address type is optional and defined by HL7 Table 0190 - Address type (see page 65).

3.28.8 Other geographic designation (ST)

Other geographic designation includes county, bioregion, SMSA, etc.

3.28.9 County/parish code (IS)

A code that represents the county in which the specified address resides. User-defined Table 0289 - County/parish (see page 187) is used as the HL7 identifier for the user-defined table of values for this component. When this component is used to represent the county (or parish), component 8 <other geographic designation> should not duplicate it (i.e., the use of <other geographic designation> to represent the county is allowed only for the purpose of backward compatibility, and should be discouraged in this and future versions of HL7).

Allowable values: codes defined by government.

User-defined Table 0289 – County/parish

Value	Description
	No suggested values defined

3.28.10 Census tract (IS)

A code that represents the census tract in which the specified address resides. User-defined Table 0288 - Census tract is used as the HL7 identifier for the user-defined table of values for this component.

Allowable Values: codes defined by government.

User-defined Table 0288 – Census tract

Value	Description
	No suggested values defined

3.28.11 Address representation code (ID)

Different <name/address types> and representations of the same name/address should be described by repeating of this field, with different values of the <name/address type> and/or <name/address representation> component.

Note: Also note that this new component remains in "alphabetic" representation with each repetition of the fields using these data types. I.e. even though the address may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Refer to HL7 table 0465 – Name/address representation (see page 191) for valid values.

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired.

This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

3.28.12 Address validity range (DR)

This component contains the start and end date/times which define the period in which this address was valid

3.28.12.1 Date range start date/time (TS)

3.28.12.2 Date range end date/time (TS)

3.29 XCN - extended composite ID number and name for persons

Components: <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ <name assembly order (ID)>

Subcomponents of family name: <surname (ST)> & <own surname prefix (ST)> & <own surname (ST)> & <surname prefix from partner/spouse (ST)> & <surname from partner/spouse (ST)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of name context: <identifier (ST)> & <text (ST)> & <name of coding system (IS)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (IS)>

Subcomponents of name validity range: <date range start date/time (TS)> & <date range end date/time (TS)>

Note: Replaces CN data type as of v 2.3.

Length: 250

This data type is used extensively appearing in the PV1, ORC, RXO, RXE, OBR and SCH segments, as well as others, where there is a need to specify the ID number and name of a person.

Example without assigning authority and assigning facility:

> |1234567^Smith^John^J^III^DR^PHD^ADT01^^L^4^M11^MR|

Examples with assigning authority and assigning facility:

Dr. Samuel Semmelweiss's provider ID was assigned by the Provider Master and was first issued at Fairview Hospital within the University Hospitals System. Since IS table values (first component of the HD) were not used for assigning authority and assigning facility, components 2 and 3 of the HD data type are populated and demoted to sub-components as follows:

> 12188^Semmelweiss^Samuel^S^IV^Dr^MD^^&Provider Master.University Hospitals&L^L^9^M10^DN^&Fairview Hospital.University Hospitals&L^A

Ludwig van Beethoven's medical record number was assigned by the Master Patient Index and was first issued at Fairview Hospital within the University Hospitals System.

> 10535^van Beethoven&van^Ludwig^A^III^Dr^PHD^^&MPI.University Hospitals&L^L^3^M10^MR^&Fairview Hospital.University Hospitals&L^A

The XCN data type is used for doctor references including the referring doctor (PV1-8) *Referring doctor*, the receiving doctor (PV1-9) *Consulting doctor* and result copies to (OBR-28) *Result copies to.*

In the Australian context, where possible, XCN data must be populated using the method described in Appendix 10 Addressing messages using Australian Profile for Provider Directory Services (Normative) (see page 528).

Example:

|7654321A^Brown^Julie^^^Dr^^^AUSHICPR|

The key identifier for doctors is the Medicare Provider Number as it is specific for a particular address and it must be included for all doctors if possible. Although pathology providers maintain their own doctor addressing data tables, the Medicare Provider Number is key for determination of entitlements and addressing.

Component requirements:

<ID (ST)> component must be specified and valid according to the identifier scheme of selected by the Identifier type code and Assigning Authority components.

<assigning authority (HD)> component must be valued and valid.

<name type code (ID)> component should be valued and valid from HL7 Table 200.

<identifier type code (ID)> component should be valued with a valid value from HL7 Table 203.

<family name (FN)> :<surname (ST)> sub-component should to be valued.

<given name (ST)> should to be valued.

3.29.1 ID number (ST)

This string refers to the coded ID according to a user-defined table, defined by the 9th component. If the first component is present, either the source table or the assigning authority must be valued.

3.29.2 Family name (FN)

This component allows full specification of the surname of a person. Where appropriate, it differentiates the person's own surname from that of the person's partner or spouse, in cases where the person's name may contain elements from either name. It also permits messages to distinguish the surname prefix (such as "van" or "de") from the surname root.

3.29.3 Given name (ST)

First name.

3.29.4 Second and further given names or initials thereof (ST)

Multiple middle names may be included by separating them with spaces.

3.29.5 Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

3.29.6 Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

3.29.7 Degree (IS)

Used to specify an educational degree (e.g., MD). Refer to User-defined Table 0360 – Degree (see page 195) for suggested values.

3.29.8 Source table (IS)

User-defined Table 0297 – CN ID source is used as the HL7 identifier for the user-defined table of values for this component. Used to delineate the first component.

User-defined Table 0297 – CN ID source

Value	Description
	No suggested values defined

3.29.9 Assigning authority (HD)

The assigning authority is a unique identifier of the system (or organization or agency of department) that creates the data.

User-defined Table 0363 – Assigning authority (see page 310) is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD component, <namespace ID>.

Note: When the HD data type is used in a given segment as a component of a field of another data type, User-defined Table 0300 - Namespace ID (see page 160)(referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementers may continue to use User-defined Table 0300 - Namespace ID (see page 160)for the first sub-component.

3.29.10 Name type code (ID)

A code that represents the type of name. Refer to HL7 Table 0200 - Name type (see page 62) for valid values.

3.29.11 Identifier check digit (ST)

The check digit in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.

3.29.12 Code identifying the check digit scheme employed (ID)

Refer to HL7 Table 0061 - Check digit scheme for valid values.

HL7 Table 0061 - Check digit scheme

Value	Description
NPI	Check digit algorithm in the US National Provider Identifier
ISO	ISO 7064: 1983
M10	Mod 10 algorithm
M11	Mod 11 algorithm

3.29.13 Identifier type code (IS)

A code corresponding to the type of identifier. In some cases, this code may be used as a qualifier to the <assigning authority> component. Refer to HL7 Table 0203 - Identifier type (see page 301) for suggested values.

3.29.14 Assigning facility (HD)

The place or location identifier where the identifier was first assigned to the person. This component is not an inherent part of the identifier but rather part of the history of the identifier: as part of this data type, its existence is a convenience for certain intercommunicating systems.

Note: When the HD data type is used in a given segment as a component of a field of another data type, User-defined Table 0300 - Namespace ID (see page 160) (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

3.29.15 Name representation code (ID)

Different <name/address types> and representations of the same <name/address> should be described by repeating of this field, with different values of the <name/address type> and/or <name/address representation> component.

Note: This new component remains in “alphabetic” representation with each repetition of the field using these data types. I.e.. even though the name may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Refer to HL7 Table 0465 – Name/address representation for valid values.

HL7 Table 0465 - Name/address representation

Value	Description
I	Ideographic (i.e., Kanji)
A	Alphabetic (i.e., Default or some single-byte)
P	Phonetic (i.e., ASCII, Katakana, Hiragana, etc.)

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired.

This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

3.29.16 Name context (CE)

This component is used to designate the context in which a name is used. The main use case is in Australian healthcare for indigenous patients who prefer to use different names when attending different healthcare institutions. Another use case is for hinting that a XCN may represent a healthcare service or practitioner role to support Australian Profile for Provider Directory Services reverse lookups. Another use case occurs in the US where health practitioners can be licensed under slightly different names and the reporting of the correct name is vital for administrative purposes. Refer to User-defined Table 0448 – Name context for suggested values.

User-defined Table 0448 – Name context

Value	Description
HealthcareService^Healthcare Service^FHIR-ResourceType	Indicates that this XCN may have been derived from a FHIR HealthcareService resource. (It may be possible to search a FHIR Directory HealthService resources for the XCN's ID.)
PractitionerRole^Practitioner Role^FHIR-ResourceType	Indicates that this XCN may have been derived from a FHIR PractitionerRole resource. (It may be possible to search a FHIR Directory PractitionerRole resources for the XCN's ID.) Note that it is not necessary to specify this as it is implied if HealthcareService above is not specified. It is not required, so to not interfere with the potential to indicate indigenous name use for providers/patients.

3.29.17 Name validity range (DR)

This component contains the start and end date/times that define the period during which this name was valid. See DR - date/time range (see page 153) for description of subcomponents.

3.29.18 Name assembly order (ID)

A code that represents the preferred display order of the components of this person name.

Refer to HL7 Table 0444 – Name assembly order for valid values.

HL7 Table 0444 – Name assembly order

Value	Description
G	Prefix Given Middle Family Suffix
F	Prefix Family Middle Given Suffix

3.30 XON - extended composite name and identification number for organizations

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^<check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code(ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Length: 250

This data type is used in fields (e.g., PV2-23, NK1-13, PD1-3, OBR-44) to specify the name and ID number of an organization.

Example 1:

The ID for Fairview Hospital was assigned by the University Hospital enterprise's Hospital Master and was first issued at the Central Offices.

Fairview Hospital^L^716^9^M10^&Hospital Master.University Hositals&L^XX^&Central Offices.University Hospitals&L^A

Example 2:

Fairview Hospital has another ID that was issued by HCFA. Assigning Authority, HCFA, values only the first HD component, an IS data type and assigning facility is not relevant. This information might be transmitted accordingly:

Fairview Hospital^L^4544^3^M10^HCFA^XX^^A

3.30.1 Organization name (ST)

The name of the specified organization.

3.30.2 Organization name type code (IS)

A code that represents the type of name i.e., legal name, display name. Refer to User-defined Table 0204 - Organizational name type for suggested values.

User-defined Table 0204 - Organizational name type

Value	Description
A	Alias name
L	Legal name
D	Display name
SL	Stock exchange listing name

3.30.3 ID number (NM)

3.30.4 Check digit (NM)

The check digit in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.

3.30.5 Code identifying the check digit scheme employed (ID)

The check digit scheme codes are defined in HL7 Table 0061 - Check digit scheme (see page 190).

3.30.6 Assigning authority (HD)

The assigning authority is a unique identifier of the system (or organization or agency or department) that creates the data. Assigning authorities are unique across a given HL7 implementation. User-defined Table 0363 – Assigning authority (see page 310) is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD component <namespace ID>.

Note: When the HD data type is used in a given segment as a component of a field of another data type, User-defined Table 0300 - Namespace ID (see page 160) (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementers may continue to use User-defined Table 0300 - Namespace ID (see page 160) for the first sub-component.

3.30.7 Identifier type code (IS)

A code corresponding to the type of identifier. In some cases, this code may be used as a qualifier to the "Assigning authority" component. Refer to HL7 Table 0203 -Identifier type (see page 301) for suggested values.

3.30.8 Assigning facility ID (HD)

The place or location identifier where the identifier was first assigned to the person. This component is not an inherent part of the identifier but rather part of the history of the identifier: as part of this data type, its existence is a convenience for certain intercommunicating systems.

Note: When the HD data type is used in a given segment as a component of a field of another data type, User-defined Table 0300 - Namespace ID (see page 160) (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

3.30.9 Name representation code (ID)

Different <name/address types> and representations of the same <name/address> should be described by repeating of this field, with different values of the <name/address type> and/or <name/address representation> component.

Note: This new component remains in "alphabetic" representation with each repetition of the field using these data types, i.e. even though the name may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Refer to HL7 Table 0465 – Name/address representation code (see page 191) for valid values.

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired.

This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

3.31 XPN - extended person name

Components: In Version 2.3, replaces the PN data type. <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) > ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ <name assembly order (ID)>

Subcomponents of family name: <surname (ST)> ^ <own surname prefix (ST)> ^ <own surname (ST)> ^<surname prefix from partner/spouse (ST)> ^ <surname from partner/spouse (ST)>

Subcomponents of name context: <identifier (ST)> & <text (ST)> & <name of coding system (IS)> &<alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (IS)>

Subcomponents of name validity range: <date range start date/time (TS)> & <date range end date/time (TS)>

Length: 250

Note: Replaces PN data type as of v 2.3.

Example:

|Smith^John^J^III^DR^PHD^L|

3.31.1 Family name (FN)

This component allows full specification of the surname of a person. Where appropriate, it differentiates the person's own surname from that of the person's partner or spouse, in cases where the person's name may contain elements from either name. It also permits messages to distinguish the surname prefix (such as "van" or "de") from the surname root.

3.31.2 Given name (ST)

First name.

3.31.3 Second and further given names or initials thereof (ST)

Multiple middle names may be included by separating them with spaces.

3.31.4 Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

3.31.5 Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

3.31.6 Degree (IS)

Used to specify an educational degree (e.g., MD). Refer to User-defined Table 0360 – Degree for suggested values.

User-defined Table 0360 - Degree

Value	Description
AAS	Associate of Applied Science
AA	Associate of Arts
ABA	Associate of Business Administration
AE	Associate of Engineering
AS	Associate of Science
BA	Bachelor of Arts
BBA	Bachelor of Business Administration
BE	Bachelor or Engineering
BFA	Bachelor of Fine Arts
BN	Bachelor of Nursing
BS	Bachelor of Science
BSL	Bachelor of Science – Law
BT	Bachelor of Theology
CER	Certificate
DIP	Diploma
DBA	Doctor of Business Administration
DED	Doctor of Education
PharmD	Doctor of Pharmacy
PHE	Doctor of Engineering
PHD	Doctor of Philosophy
PHS	Doctor of Science
MD	Doctor of Medicine
DO	Doctor of Osteopathy
HS	High School Graduate
JD	Juris Doctor
MA	Master of Arts

Value	Description
MBA	Master of Business Administration
MCE	Master of Civil Engineering
MDI	Master of Divinity
MED	Master of Education
MEE	Master of Electrical Engineering
ME	Master of Engineering
MFA	Master of Fine Arts
MME	Master of Mechanical Engineering
MS	Master of Science
MSL	Master of Science – Law
MT	Master of Theology
NG	Non-Graduate
SEC	Secretarial Certificate
TS	Trade School Graduate

3.31.7 Name type code (ID)

A code that represents the type of name. Refer to HL7 Table 0200 - Name type (see page 62) for valid values.

Note: The content of Legal Name is country specific. In the US the legal name is the same as the current married name.

3.31.8 Name representation code (ID)

Different <name/address types> and representations of the same <name/address> should be described by repeating of this field, with different values of the <name/address type> and/or <name/address representation> component.

Note: This new component remains in "alphabetic" representation with each repetition of the field using these data types. I.e. even though the name may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Refer to HL7 Table 0465 – Name/address representation (see page 191) for valid values.

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired.

This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

3.31.9 Name context (CE)

Subcomponents of name context: <identifier (ID)> & <text (ST)> & <name of coding system (IS)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (IS)>

This component is used to designate the context in which a name is used. The main use case is in Australian healthcare for indigenous patients who prefer to use different names when attending different healthcare institutions. Another use case occurs in the US where health practitioners can be licensed under slightly different names and the reporting of the correct name is vital for administrative purposes. Refer to User-defined Table 0448 – Name context for suggested values.

User-defined Table 0448 – Name context

Value	Description
	No suggested values defined

3.31.10 Name validity range (DR)

This component contains the start and end date/times which define the period during which this name was valid. See "DR - date/time range (see page 153)" for description of subcomponents.

3.31.11 Name assembly order (ID)

A code that represents the preferred display order of the components of this person name. Refer to HL7 Table 0444 – Name assembly order (see page 192) for valid values.

3.32 XTN - extended telecommunication number

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Note: Replaces TN data type as of v 2.3

Length: 250

Example:

(415)555-3210^ORN^FX^

3.32.1 [(999)] 999-9999 [X99999] [C any text]

Defined as the TN data type (see HL7 International v2.4 Section 2.9.45, “TN - telephone number”), except that the length of the country access code has been increased to three.

3.32.2 Telecommunication use code (ID)

A code that represents a specific use of a telecommunication number. Refer to HL7 Table 0201 - Telecommunication use code for valid values.

HL7 Table 0201 - Telecommunication use code

Value	Description
PRN	Primary Residence Number
ORN	Other Residence Number
WPN	Work Number
VHN	Vacation Home Number
ASN	Answering Service Number
EMR	Emergency Number
NET	Network (email) Address
BPN	Beeper Number

3.32.3 Telecommunication equipment type (ID)

A code that represents the type of telecommunication equipment. Refer to HL7 Table 0202 - Telecommunication equipment type for valid values.

HL7 Table 0202 - Telecommunication equipment type

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular Phone
BP	Beeper
Internet	Internet Address: Use Only If Telecommunication Use Code Is NET
X.400	X.400 email address: Use Only If Telecommunication Use Code Is NET

3.32.4 Email address (ST)

Internationalization note: To make this data type interoperate with CEN's Telecommunication data attribute group, we allow use of the second component for email addresses. The presence of an email address is specified by the addition of the value *NET* to the Phone Use Code table, and the type of Internet address is specified with the values *Internet* and *X.400* to the Phone Equipment Type table. When used for an Internet address, the first component of the XTN data type will be null. If the @-sign is being used as a subcomponent delimiter, the HL7 subcomponent escape sequence may be used when encoding an Internet address (see HL7 International v2.4 Section 2.10.1, "Formatting codes").

Note: Components five through nine reiterate the basic function of the first component in a delimited form that allows the expression of both local and international telephone numbers. In Version 2.3, the recommended form for the telephone number is to use the delimited form rather than the unstructured form supported by the first component (which is left in for backward compatibility only).

4 Observation Reporting

4.1 Purpose

This section describes the transaction set required for sending structured patient-oriented clinical data from one computer system to another. A common use of these transaction sets will be to transmit observations and results of diagnostic studies from the producing system (e.g., clinical laboratory system, Radiology system) (the filler), to the ordering system (e.g., GP Surgery, specialists office system) (the placer). However, the transaction set is not limited to such transactions. Observations can be sent from producing systems to archival medical record systems (not necessarily the order placer) and from such medical record systems to other systems that were not part of the ordering loop, e.g., an office practice system of the referring physician for inpatient test results ordered by an inpatient surgeon. These transaction sets permit the transmission of any kind of clinical observations including (but not limited to) clinical laboratory results, the results of imaging studies (excluding the image), Pulmonary function studies, measures of patient status and condition, vital signs, intake and output, severity and/or frequency of symptoms, drug allergies, problem lists, diagnostic lists, physician and nursing history, physicals, progress notes, operative notes and so on. An observation can be one of many data types. The main ones are text, numbers and codes. This provides the flexibility needed to transmit observations that are recorded as continuous values (e.g., glucose, diastolic blood pressure), as categorical values, e.g., patient position (sitting, reclining or standing), VDRL (reactive, weakly reactive or nonreactive), or as text. An entire History and Physical could be transmitted as an observation whose value is one large chunk of formatted text.

This section provides mechanisms for transmitting structured, record-oriented reports. This means that individual observations are transmitted as separate logical entities (objects), and within this entity, separate fields are defined for identifying the observation, its values, its units, normal ranges, etc., such that the receiving system can “understand,” reorganize and/or react to the contents of these messages.

Observations may be transmitted in a solicited (in response to a query) or unsolicited mode. In the solicited mode, a user requests a set of observations according to criteria transmitted by the user. The sending system responds with existing data to satisfy the query (subject to access controls). Queries do not elicit new observations by the target system, they simply retrieve old observations. (The query message is covered in the International standard but is not covered in this guide) The unsolicited mode is used primarily to transmit the values of new observations. It is the mode used by Laboratories to return the values of observations requested by an ordering provider/system. A laboratory system, for example, would usually send the results of an morning electrolytes to the ordering system via the unsolicited mode. Calling such transactions unsolicited may sound like a misnomer, but is not. The placing service solicits the producing service to make the observation. It could also (through a query) solicit the value of that observation after it has been made. However, such an approach would demand continuous polling of the producing system until the result was produced. Using the unsolicited mode, the producing service returns the value of an observation as soon as it is available. The unsolicited mode can also be used to transmit new results to a system (e.g., an archival medical record system or copy doctor) that did not order the observation.

Observations are usually ordered and reported as sets (batteries) of many separate observations. Physicians order electrolytes (consisting of sodium, potassium, chloride, bicarbonate) or vitals (consisting of diastolic blood pressure, systolic blood pressure, pulse, and temperature). Moreover, tests that we may think of as single entity, e.g., cardiac echo, usually yield multiple separate measurements, e.g., left ventricular diameter, left atrial diameter, etc. Moreover, observations that are usually reported as text (e.g., the review of systems from the history and physical) can also be considered a set of separately analysable units (e.g., cardiac history, pulmonary history, genito-urinary history, etc.). We strongly suggest that all text clinical reports be broken down into such separate analysable entities and that these individual entities be transmitted as separate OBX segments. Because many attributes of a set of observations taken at one time will be identical, one OBR segment serves as a header for the report and carries the information that applies to all of the individual observations in the set. In the case of ordered observations, the OBR segment is a “turn-around document” like the manual request forms it replaces. It carries information about the order to the producing service; a copy of the OBR with additional fields completed is returned with the observations to the requesting service. Not all observations are preceded by an order. However, all observations whether explicitly ordered or initiated without an order are reported with an OBR segment as the report header.

The OBR segment provides information that applies to all of the observations that follow. It includes a field that identifies a particular battery (or panel or set) of observations (e.g., electrolytes, vital signs or Admission H&P). For simplicity we will refer to the observation set as the battery. The battery usually corresponds to the entity that is ordered or performed as a unit. (In the case of a query, observation sets may be a more arbitrary collection of observations.) The OBX segment provides information about a single observation, and it includes a field that identifies that single observation (e.g., potassium, diastolic blood pressure or admission diagnosis). The codes used in these fields (OBX-3) are usually LOINC codes and standard LOINC codes, units and reference ranges for many common Observations have been specified by the RCPA here[59]. In the past, local institutions tended to invent their own unique code systems for identifying test and other clinical observations because standard codes were not available. Such local code systems sufficed for transmitting information within the institutions but presented high barriers to pooling data from many sources for research or for building medical record systems. However, standard code systems such as LOINC® and SNOMED now exist for many of these purposes, and we strongly encourage their use in observation reporting. These codes can be sent either as the only code or they can be sent along with the local historic code as the second code system in a CE code.

4.2 Glossary

Placer:
Person or service that requests (places order for) an observation battery, e.g., the physician, the practice, clinic, or ward service, that orders a lab test. The meaning is synonymous with,
and used interchangeably with, requester. See ORC-2-placer order number, Section 4.5.1.2, “Placer order number” of HL7 International V2.4.

59 https://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads

Filler:
Person, or service, who produces the observations (fills the order) requested by the requestor. The word is synonymous with "producer" and includes diagnostic services and clinical services and care providers who report observations about their patients. The clinical laboratory is a producer of lab test results (filler of a lab order), the nursing service is the producer of vital signs observations (the filler of orders to measure vital signs), and so on. See ORC-3-filler order number, Section 4.5.1.3, “Filler order number.” of HL7 International V2.4.

Battery:
A set of one or more observations identified as by a single name and code number, and treated as a shorthand unit for ordering or retrieving results of the constituent observations. In keeping with the mathematical conventions about set, a battery can be a single observation. Vital signs, electrolytes, routine admission tests, and obstetrical ultrasound are all examples. Vital signs (conventionally) consist of diastolic and systolic blood pressure, pulse, and respiratory rate. Electrolytes usually consist of Na+, K+, Cl-, and HCO3-. Routine admission tests might contain FBC, Electrolytes, LFTs, and Urinalysis. (Note that the elements of a battery for our purposes may also be batteries). Obstetrical ultrasound is a battery made up of traditional component measurements and the impression, all of which would be returned as separate results when returned to the requestor. A test involving waveform recording (such as an ECG) can be represented as a battery comprised of results of many categories, including digital waveform data, labels and annotations to the data, measurements, and the impression The word battery is used in this specification synonymously with the word profile or panel. The individual observation elements within a battery may be characteristic of a physiologic system (e.g., liver function tests), or many different physiologic systems.

Observation:
A measurement of a single variable or a single value derived logically and/or algebraically from other measured or derived values. A test result, a diastolic blood pressure, and a single chest X-ray impression are examples of observations. In certain circumstances, tracings and images may be treated by HL7 as individual observations and sent as a single OBX. These include waveform data described in Section 7.15, “Waveform – Trigger Events & Message Definitions,” of HL7 International V2.4 and encapsulated data aggregates using the ED data type described in Section 2.9.16, “ED-encapsulated data,” of HL7 International V2.4 (which can represent actual images, audio data, etc.).

4.3 Trigger Events and Message Definitions

The triggering events that follow are all served by the ORU (Observational report – Unsolicited) or the ORF (Observational Report Response) messages in combination with ACK and QRY. Only the ORU message is covered in the Australian localisation and some of the optional segments have been removed.

ORU – unsolicited observation message (event R01)

ORU^R01 Unsolicited Observation Message

The structure documented here differs from the international version as NTE Segments have been removed from under both OBR and OBX segments and SHOULD NOT be used in Australian messages. The PV1 segment is also mandatory, whereas it is optional in the International standard. The optional FTI (Financial Transaction) and CTI (Clinical Trials identification) which are present in the international standard, have also been removed from the ORU Message structure

The CTD segment in this trigger is used to transmit temporary patient contact details specific to this order.

ORU^R01^ORU_R01 Message Structure

```
MSH Message Header
{
    PID Patient Identification
    [
```

```
        [PD1] Additional Demographics
        [{NK1}] Next of Kin/Associated Parties
        PV1 Patient Visit
        [PV2] Patient Visit - Additional Info
    ]
    {
        [ORC] Order common
        OBR Observations Report ID
        [CTD] Contact Data
        {
            [OBX] Observation/Result
        }
    }
}
[DSC] Continuation Pointer
```

The ORU message performs three functions:

1. It returns the filler's status on the tests ordered by the placer.
2. It contains the atomic results in OBX segments which are used to populate the placer's result database.
3. It contains the formatted report e.g. pdf, of how the laboratory intended the results to be presented and to be displayed on the placer's system.

The ORU^R01 message is sent out by the laboratory and in response a ACK^R01 message should be produced to confirm receipt of the ORU message. The structure of the ACK message is as below:

Structure of the ACK^R01^ACK message

```
MSH Message Header
MSA Message Acknowledgment
[ ERR ] Error
```

The Message ID in the original MSH from the ORU^R01 message is returned in the MSA -2 Message Control ID to confirm receipt as detailed in section 2.16.8.2 of HL7 International V2.4.

4.4 Segments

The full definitions of many segments required for reporting clinical observations are included in other sections.

4.4.1 OBR – Observation Request Segment

In the reporting of clinical data, the OBR serves as the report header. It identifies the observation set represented by the following atomic observations. It includes the relevant ordering information when that applies. It contains many of the attributes that usually apply to all of the included observations.

When a set of observations is ordered, the order message contains an OBR segment. However, observations can be collected and reported without an antecedent order. When observations are reported, the report message also includes one or more OBR segments. So, the OBR segment is like a turn-around document. Some fields in the OBR segment apply only to the ordering message and some to the reporting message. To those familiar with healthcare procedures, these should be obvious from their names (e.g., transcriptionist or principal result interpreter could only apply to the reporting phase).

The OBR segments confirm the status and completion of the ordered tests back to the placer allowing the placer to check off each test ordered as it is received. The OBR segments do not contain the results or when the results will be available. However, the structure of the OBR and OBX segments in the ORU can reflect the specimen used to determine the results e.g. specimen ID.

HL7 Attribute Table – OBR – Observation Request

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	C			4 Observation Reporting (see page 210)	Set ID - OBR
2	250**	EI	C			4 Observation Reporting (see page 210)	Placer Order Number
3	250**	EI	C			00238	Filler Order Number
4	250	CE	R			00238	Universal Service Identifier
~~5~~	~~2~~	~~ID~~	~~X~~			~~00239~~	~~Priority - OBR~~ (Superseded)
~~6~~	~~26~~	~~TS~~	~~X~~			~~00240~~	~~Requested Date/ Time~~ (Superseded)
7	26	TS	C			00241	Observation Date/ Time #
8	26	TS	O			00242	Observation End Date/Time #
9	250***	CQ	O			00243	Collection Volume *
10	250	XCN	O	Y		00244	Collector Identifier *
11	1	ID	O		0065 (see page 214)	00245	Specimen Action Code *
12	250	CE	O			00246	Danger Code
13	300	ST	O			00247	Relevant Clinical Info
14	26	TS	C			00248	Specimen Received date/Time *
15	300	CM	O		0070	00249	Specimen Source *
16	250	XCN	C****	Y		00226	Ordering Provider

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
17	250	XTN	O	Y/2		00250	Order Callback Phone Number
18	60	ST	O	Y****		00251	Placer Field 1
19	60	ST	O	Y****		00252	Placer Field 2
20	60	ST	O	Y****		00253	Filler Field 1 †
21	60	ST	O	Y****		00254	Filler Field 2 †
22	26	TS	C			00255	Results Rpt/Status Chng - Date/Time †
23	40	CM	O			00256	Charge to Practice †
24	10	ID	R		0074 (see page 225)	00257	Diagnostic Serv Section ID
25	1	ID	C		0123 (see page 227)	00258	Result Status †
~~26~~	~~400~~	~~CM~~	~~O~~			~~00259~~	~~Parent Result +~~ (Refer to notes in OBR-26 below)
27	200	TQ	O	Y		00221	Quantity/Timing
28	250	XCN	O	Y****		00260	Result Copies To
~~29~~	~~200~~	~~CM~~	~~O~~			~~00261~~	~~Parent~~ (Refer to notes in OBR-29 below)
30	20	ID	O		0124 (see page 229)	00262	Transportation Mode
31	250	CE	O	Y		00263	Reason for Study
32	200	CM	O			00264	Principle Result Interpreter †
33	200	CM	O	Y		00265	Assistant Result Interpreter †
34	200	CM	O	Y		00266	Technician †
35	200	CM	O	Y		00267	Transcriptionist †

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
36	26	TS	O			00268	Scheduled date/ Time †
37	4	NM	O			01028	Number of Sample Containers *
38	250	CE	O	Y		01029	Transport Logistics of Collected Sample *
39	250	CE	O	Y		01030	Collector's Comment
40	250	CE	O			01031	Transport Arrangement Responsibility
41	30	ID	O		0224 (see page 232)	01032	Transport Arranged
42	1	ID	O		0225 (see page 232)	01033	Escort Required
43	250	CE	O	Y		01034	Planned Patient transport Comment
44	250	CE	O		0088 (see page 232)	00393	Procedure Code
45	250	CE	O	Y	0340	01316	Procedure Code Modifier
46	250	CE	O	Y	0411 (see page 234)	01474	Placer Supplemental Service Information
47	250	CE	O	Y	0411 (see page 234)	01475	Filler Supplemental Service Information

Legend:

** ALERT: The field length of OBR-2 and OBR-3 of 250 characters for Australian usage is a variance to the HL7 V 2.4 field length of 22 characters.
*** ALERT: The field length of OBR-9 of 250 characters for Australian usage is a variance to the HL7 V 2.4 field length of 20 characters.

**** ALERT: Variance with HL7 2.4 International.

Fields with Strikethrough are either deprecated or not used in Australia.

The *daggered (†)* items in this segment are not created by the placer known to the filler, not the placer. They are created by the filler and valued as needed when the OBR segment is returned as part of a report. Hence on a new order sent to the filler, they are not valued. There is an exception when the filler initiates the order. In that case, the

filler order number is valued and the placer order number may be blank. They are valued by the filler as needed when the OBR segment is returned as part of a report.

The *starred (*)* fields are only relevant when an observation is associated with a specimen. These are completed by the placer when the placer obtains the specimen. They are completed by the filler when the filler obtains the specimen.

OBR-24 (Diagnostic Serv Section ID) has been changed to required as many end points need to know if the message contains pathology, radiology or a clinical message to allow routing of a message to the appropriate location in a practice management application.

OBR-7-observation date/time and OBR-8-observation end date/time (*flagged with #*) are the physiologically relevant times. In the case of an observation on a specimen, they represent the start and end of the specimen collection. In the case of an observation obtained directly from a subject (e.g., BP, Chest X-ray), they represent the start and end time of the observation.

OBR-28 Repeat is NOT restricted to 5 copy doctors in this specification as it is in the HL7 International specification.

4.4.1.1 OBR-1 Set ID - OBR (SI) 00237

Definition: For the first order transmitted, the sequence number shall be 1; for the second order, it shall be 2; and so on. This field is required if more than one OBR segment is sent with the order.

4.4.1.2 OBR-2 Placer order number (EI) 00216

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is a case of the Entity Identifier data type (See Datatypes, “EI - Entity identifier”). The first component is a string that identifies an individual order (e.g., OBR). It is assigned by the placer (ordering application/site). It identifies an order uniquely among all orders from a particular ordering site (identified by subsequent components). The second through fourth components contain the site ID of the placing site in the same form as the HD data type which is covered in the datatypes section.

Since third party providers at another site (those other than the placer and filler of an order) can send and receive ORM and ORR messages (i.e. create orders), the placer site ID in this field may not be the same as any sending and receiving HDs (as identified in the MSH segment).

ORC-2-placer order number is the same as OBR-2-placer order number. If the placer order number is not present in the ORC, it must be present in the associated OBR and vice versa. If both fields, ORC-2-placer order number and OBR-2-placer order number, are valued, they must contain the same value. When results are transmitted in an ORU message, an ORC is not required, and the identifying placer order number must be present in the OBR segments. These rules apply to the few other fields that are present in both ORC and OBR for upward compatibility (e.g., quantity/timing, parent numbers, ordering provider, and ordering call back numbers).

An ORC/OBR segment pair must be used for each test where the Placer Order Number under the one MSH can be the same for each requested test or a different (recommended) number can be allocated to each test. The Placer Group Number in the ORC segment only, links all orders into a request for that patient episode.

Note: The field length of 250 characters is a variation to the HL7 International standard which has a length of 22 characters.

Placer order numbers are optional in patient referral messages (but OBR-3 Filler Order number below are required).

4.4.1.3 OBR-3 Filler order number (EI) 00217

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Example: 16-72012244-BFM-0^QML^2184^AUSNATA

Definition: This field is the order number associated with the filling application. It is a case of the Entity Identifier data type (See Datatypes, “EI - Entity Identifier”). Its first component is a string that identifies an order detail segment (e.g., OBR). It is assigned by the order filler application. This string must uniquely identify the order (as specified in the order detail segment) from other orders in a particular filling application (e.g., clinical laboratory). This uniqueness must persist over time. The second through fourth components contain the original authoring filler site ID, in the form of the HD data type (see Datatypes, “HD - hierarchic designator”). The second component of the filler order number always identifies the actual filler of an order. Since third party sites/ applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the filler application ID in this field may not be the same as any sending and receiving application HDs (as identified in the MSH segment).

ORC-3-filler order number is the same as OBR-3-filler order number. If the filler order number is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments. The filler order number (OBR-3 or ORC-3) also uniquely identifies an order and its associated observations. For example, suppose that an institution collects observations from several ancillary applications into a common database and this common database is queried by yet another application for observations. In this case, the filler order number and placer order number transmitted by the common application would be that of the original filler and placer, respectively, rather than a new one assigned by the common application.

Note: The field length of 250 characters is a variation to the HL7 International standard which has a length of 22 characters.

Messages other than order messages must have the filler order number present and must qualify the identifier using the site identifier (HD components: namespace, universal id, universal ID type of EI) of the authoring organisation which allows for the unique identification of the document across all practices.

The filler order number includes the site identifier of the organisation that generates the document/result/referral and the entity identifier (generated by the clinical application) which must be unique to each document/result/ referral, within the same filler site, over time. This should allow for corrected documents to be issued (using the same OBR-3 Filler Order number (EI) as the original document).

4.4.1.4 OBR-4 Universal service identifier (CE) 00238

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier(ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Example: CBC^MASTER FULL BLOOD COUNT^2184

Definition: This field is the identifier code for the requested observation/test/battery. This can be based on local and/or “universal” codes. We recommend the “universal” procedure identifier if available (e.g. SNOMED-CT).

This field is used for the requested service. The RCPA Board approved Requesting Pathology Terminology Reference Set is available on the RCPA website[60].

To indicate the completion of an order, the code set used in the result (ORU) should be the same code set used in the order (ORM).

If local coding systems are used should be of a standard format i.e. code^description^NATA#-Version#

For example:

|26958001^liver function test^SCT| - SNOMED CT

60 http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads

|COAG^Coagulation studies^NATA4810-4|

|FBE^Full Blood Examination^NATA7816| - version number not included.

The 'NATA3-Version#' indicates the test was done by a specific laboratory using the methods and formats linked to the version number.

4.4.1.4.1 OBR-4 codes in referral messages

In referral messages the referral summary is indicated by the OBR-4 code, which should be either a child concept of the SNOMED CT-AU concept 373942005 Discharge Summary (record artifact), for hospital discharge or a child of 3457005 | Patient referral (procedure) for provider to provider referral. This OBR/OBX group should contain the VMR data if available. Senders may include older referrals in a REF message but the current referral must appear as the first OBR/OBX group. A initial candidate set of record artifact descended codes has been submitted to the Australian Digital Health Agency

4.4.1.4.1.1 Examples of codes (non-exhaustive) for use in referral messages to indicate referral summary.

Preferred Term	Concept ID	Parent Hierarchy
Discharge summary	373942005	Record artifact
Patient referral to specialist	103696004	Procedure
Referral to general practitioner	183561008	Procedure
Referral to hospital	310449005	Procedure
Referral to physiotherapist	308447003	Procedure
Referral to occupational therapist	308453003	Procedure
Patient referral to dietitian	103699006	Procedure
Referral to optometrist	308465004	Procedure
Referral to podiatrist	308451001	Procedure
Referral to speech and language therapist	308452008	Procedure
Referral to osteopath	308450000	Procedure
Referral to chiropractor	308449000	Procedure
Referral to dental surgeon	306303000	Procedure
Patient referral to acupuncturist	103703009	Procedure
Referral to psychologist	308459004	Procedure
Referral to social worker	308440001	Procedure

Preferred Term	Concept ID	Parent Hierarchy
Referral to pharmacist	306362008	Procedure
Proposed codes		
Hospital discharge summary (record artifact) Hospital to GP discharge summary (record artifact) Referral to exercise physiologist (procedure) Discharge summary to pharmacist (record artifact) Discharge summary to community health service (record artifact) Discharge summary to GP (record artifact) Enhanced primary care referral (procedure)	(Refer to SNOMED-CT for the values of these and other codes which have been requests have been submitted to Australian Digital Health Agency National Clinical Terminology Service.)	

Refer to SNOMED-CT AU for complete list of codes.

4.4.1.5 OBR-5 Priority - OBR (ID) 00239

Definition: This field has been deprecated. It is not used. Previously priority (e.g., STAT, ASAP), but this information is carried as the sixth component of OBR-27-quantity/timing.

4.4.1.6 OBR-6 Requested date/time (TS) 00240

Definition: This field has been deprecated. This is not used. Previously requested date/time. That information is now carried in the fourth component of the OBR-27- quantity/timing.

4.4.1.7 OBR-7 Observation date/time (TS) 00241

Definition: This field is the clinically relevant date/time of the observation. In the case of observations taken directly from a subject, it is the actual date and time the observation was obtained. In the case of a specimen-associated study, this field shall represent the date and time the specimen was collected or obtained. (This is a results-only field except when the placer or a third party has already drawn the specimen.) This field is conditionally required. When the OBR is transmitted as part of a report message, the field must be filled in. If it is transmitted as part of a request and a sample has been sent along as part of the request, this field must be filled in because this specimen time is the physiologically relevant datetime of the observation.

If time is transmitted it should be specified to the minimum precision of minutes and the time zone must be included.

4.4.1.8 OBR-8 Observation end date/time (TS) 00242

Definition: This field is the end date and time of a study or timed specimen collection. If an observation takes place over a substantial period of time, it will indicate when the observation period ended. For observations made at a point in time, it will be null. This is a results field except when the placer or a party other than the filler has already drawn the specimen.

If time is transmitted it should be specified to the minimum precision of minutes and the time zone must be included.

4.4.1.9 OBR-9 Collection volume (CQ) 00243

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <test (ST)> & <name of coding system (IS)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (IS)>
Definition: For laboratory tests, the collection volume is the volume of a specimen. The default unit is ML. Specifically, units should be expressed using UCUM (unitsofmeasure.org). This is a results-only field except when the placer or a party has already drawn the specimen.

Note: The field length of 250 characters is a variation to the HL7 International standard field length of 20 characters.

4.4.1.10 OBR-10 Collector identifier (XCN) 00244

Components: <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> &<universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: When a specimen is required for the study, this field will identify the person, department, or facility that collected the specimen. Either name or ID code, or both, may be present.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

4.4.1.11 OBR-11 Specimen action code (ID) 00245

Definition: This field is the action to be taken with respect to the specimens that accompany or precede this order. The purpose of this field is to further qualify (when appropriate) the general action indicated by the order control code contained in the accompanying ORC segment. For example, when a new order (ORC - “NW”) is sent to the lab, this field would be used to tell the lab whether or not to collect the specimen (“L” or “O”).

HL7 Table 0065 - Specimen Action Code

Value	Description
A	Add ordered tests to the existing Specimen
G	Generated order; reflex order
L	lab to obtain specimen from patient
O	Specimen obtained by service other than Lab
P	Pending specimen; Order sent prior to delivery

Value	Description
R	Revised order
S	Schedule the test specified below

4.4.1.12 OBR-12 Danger code (CE) 00246

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field is the code and/or text indicating any known or suspected patient or specimen hazards, e.g., patient with active tuberculosis or blood from a hepatitis patient. Either code and/or text may be absent. However, the code is always placed in the first component position and any free text in the second component. Thus, free text without a code must be preceded by a component delimiter.

Snomed-CT AU[61] is a recommended source terminology for this field.

e.g. 71837009[62]^Cytotoxic agent (product)^SCT

4.4.1.13 OBR-13 Relevant clinical information (ST) 00247

Definition: This field contains any additional clinical information about the patient or specimen. This field is used to report the suspected diagnosis and clinical findings on requests for interpreted diagnostic studies. Examples include reporting the amount of inspired carbon dioxide for blood gasses, the point in the menstrual cycle for cervical pap tests, and other conditions that influence test interpretations. For some orders this information may be sent on a more structured form as a series of OBX segments that immediately follow the order segment.

4.4.1.14 OBR-14 Specimen received date/time (TS) 00248

Definition: For observations requiring a specimen, the specimen received date/time is the actual login time at the diagnostic service. This field must contain a value when the order is accompanied by a specimen, or when the observation required a specimen and the message is a report.

If time is transmitted it should be specified to the minimum precision of minutes and the time zone must be included.

4.4.1.15 OBR-15 Specimen source (CM) 00249

Components: <specimen source name or code (CE)> ^ <additives (TX)> ^ <freetext (TX)> ^ <body site (CE)> ^ <site modifier (CE)> ^ <collection method modifier code (CE)>

Subcomponents of specimen source name or doe: <identifier (ST)> & <test (ST)> & <name of coding system (IS)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

61 http://browser.ihtsdotools.org/?perspective=full&conceptId1=404684003&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=46011000052107
62 http://browser.ihtsdotools.org/?perspective=full&conceptId1=71837009&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=32570271000036106

Subcomponents of body site: <identifier (ST)> & <test (ST)> & <name of coding system (IS)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of site modifier: <identifier (ST)> & <test (ST)> & <name of coding system (IS)> &<alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of collection method modifier code: <identifier (ST)> & <test (ST)> & <name of coding system (IS)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field identifies the site where the specimen should be obtained or where the service should be performed.

The first component contains the specimen source name or code (as a CE data type component). (Even in the case of observations whose name implies the source, a source may be required, e.g., blood culture – heart blood.) Refer to HL7 table 0070 - Specimen source codes for valid entries.

SNOMED-CT AU is recommended as a terminology source this field. e.g. 122575003&Urine Specimen&SCT

HL7 Table 0070 – Specimen source codes

Value	Description
ABS	Abscess
AMN	Amniotic fluid
ASP	Aspirate
BPH	Basophils
BIFL	Bile fluid
BLDA	Blood arterial
BBL	Blood bag
BLDC	Blood capillary
BPU	Blood product unit
BLDV	Blood venous
BON	Bone
BRTH	Breath (use EXHLD)
BRO	Bronchial
BRN	Burn
CALC	Calculus (=Stone)
CDM	Cardiac muscle
CNL	Cannula

Value	Description
CTP	Catheter tip
CSF	Cerebral spinal fluid
CVM	Cervical mucus
CVX	Cervix
COL	Colostrum
BLDCO	Cord blood
CNJT	Conjunctiva
CUR	Curettage
CYST	Cyst
DIAF	Dialysis fluid
DOSE	Dose med or substance
DRN	Drain
EAR	Ear
EARW	Ear wax (cerumen)
ELT	Electrode
ENDC	Endocardium
ENDM	Endometrium
EOS	Eosinophils
RBC	Erythrocytes
EYE	Eye
EXG	Exhaled gas (=breath)
FIB	Fibroblasts
FLT	Filter
FIST	Fistula
FLU	Body fluid, unsp
GAS	Gas

Value	Description
GAST	Gastric fluid/contents
GEN	Genital
GENC	Genital cervix
GENL	Genital lochia
GENV	Genital vaginal
HAR	Hair
IHG	Inhaled Gas
IT	Intubation tube
ISLT	Isolate
LAM	Lamella
WBC	Leukocytes
LN	Line
LNA	Line arterial
LNV	Line venous
LIQ	Liquid NOS
LYM	Lymphocytes
MAC	Macrophages
MAR	Marrow
MEC	Meconium
MBLD	Menstrual blood
MLK	Milk
MILK	Breast milk
NAIL	Nail
NOS	Nose (nasal passage)
ORH	Other
PAFL	Pancreatic fluid

Value	Description
PAT	Patient
PRT	Peritoneal fluid /ascites
PLC	Placenta
PLAS	Plasma
PLB	Plasma bag
PLR	Pleural fluid (thoracentesis fld)
PMN	Polymorphonuclear neutrophils
PPP	Platelet poor plasma
PRP	Platelet rich plasma
PUS	Pus
RT	Route of medicine
SAL	Saliva
SMN	Seminal fluid
SER	Serum
SKN	Skin
SKM	Skeletal muscle
SPRM	Spermatozoa
SPT	Sputum
SPTC	Sputum - coughed
SPTT	Sputum - tracheal aspirate
STON	Stone (use CALC)
STL	Stool = Fecal
SWT	Sweat
SNV	Synovial fluid (Joint fluid)
TEAR	Tears
THRT	Throat

Value	Description
THRB	Thrombocyte (platelet)
TISS	Tissue
TISG	Tissue gall bladder
TLGI	Tissue large intestine
TLNG	Tissue lung
TISPL	Tissue placenta
TSMI	Tissue small intestine
TISU	Tissue ulcer
TUB	Tube NOS
ULC	Ulcer
UMB	Umbilical blood
UMED	Unknown medicine
URTH	Urethra
UR	Urine
URC	Urine clean catch
URT	Urine catheter
URNS	Urine sediment
USUB	Unknown substance
VITF	Vitreous Fluid
VOM	Vomitus
BLD	Whole blood
BDY	Whole body
WAT	Water
WICK	Wick
WND	Wound
WNDA	Wound abscess

Value	Description
WNDE	Wound exudate
WNDD	Wound drainage
XXX	To be specified in another part of the message

The second component should include free text additives to the specimen such as Heparin, EDTA, or Oxlate, when applicable.

The third is a free text component describing the method of collection when that information is a part of the order. When the method of collection is logically an observation result, it should be included as a result segment.

The fourth component specifies the body site from which the specimen was obtained, and the fifth is the site modifier. For example, the site could be antecubital fossa, and the site modifier “right.” The components of the CE fields become subcomponents. Refer to HL7 Table 0163 – Body site (see page 0). SNOMED-CT AU is recommended as a terminology source this field. e.g. 64033007&kidney structure&SCT

HL7 Table 0163 – Body site

Value	Description
BE	Bilateral Ears
OU	Bilateral Eyes
BN	Bilateral Nares
BU	Buttock
CT	Chest Tube
LA	Left Arm
LAC	Left Anterior Chest
LACF	Left Antecubital Fossa
LD	Left Deltoid
LE	Left Ear
LEJ	Left External Jugular
OS	Left Eye
LF	Left Foot
LG	Left Gluteus Medius

Value	Description
LH	Left Hand
LIJ	Left Internal Jugular
LLAQ	Left Lower Abd Quadrant
LLFA	Left Lower Forearm
LMFA	Left Mid Forearm
LN	Left Naris
LPC	Left Posterior Chest
LSC	Left Subclavian
LT	Left Thigh
LUA	Left Upper Arm
LUAQ	Left Upper Abd Quadrant
LUFA	Left Upper Forearm
LVG	Left Ventragluteal
LVL	Left Vastus Lateralis
NB	Nebulized
PA	Perianal
PERIN	Perineal
RA	Right Arm
RAC	Right Anterior Chest
RACF	Right Antecubital Fossa
RD	Right Deltoid
RE	Right Ear
REJ	Right External Jugular
OD	Right Eye
RF	Right Foot
RG	Right Gluteus Medius

Value	Description
RH	Right Hand
RIJ	Right Internal Jugular
RLAQ	Rt Lower Abd Quadrant
RLFA	Right Lower Forearm
RMFA	Right Mid Forearm
RN	Right Naris
RPC	Right Posterior Chest
RSC	Right Subclavian
RT	Right Thigh
RUA	Right Upper Arm
RUAQ	Right Upper Abd Quadrant
RUFA	Right Upper Forearm
RVL	Right Vastus Lateralis
RVG	Right Ventragluteal

The fifth component indicates whether the specimen is frozen as part of the collection method. Suggested values are F (Frozen); R (Refrigerated). If the component is blank, the specimen is assumed to be at room temperature.

4.4.1.16 OBR-16 Ordering provider (XCN) 00226

Components: <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the provider who ordered the test. Either the ID code or the name, or both, may be present. This is the same as ORC-12-Ordering provider. If ORC-12 does not contain the ordering provider then it must be present in the associated OBR and vice versa. If both, ORC-12 *Ordering provider* and OBR-16 *Ordering Provider* are valued, then both must contain the same value. When results are sent in an ORU message, an ORC is not required, so the identifying ordering provider must be present in the OBR segment. See also PV1-8 *Referring Doctor*.

In the Australian setting Medicare provider numbers are used to provide a location specific identifier.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

In referral messages this field may be blank in the case of the referral letter, but the original value should be preserved in the case of existing reports that are being forwarded in OBR/OBX groups. e.g. copies of pathology and radiology reports.

4.4.1.17 OBR-17 Order callback phone number (XTN) 00250

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field is the telephone number for reporting a status or a result using the standard format with extension and/or beeper number when applicable.

Note: This field is not the same as ORC-14 *Call-back Phone Number*.

4.4.1.18 OBR-18 Placer field 1 (ST) 00251

Definition: This field is user field #1. Text sent by the placer will be returned with the results.

4.4.1.19 OBR-19 Placer field 2 (ST) 00252

Definition: This field is similar to placer field #1.

4.4.1.20 OBR-20 Filler field 1 (ST) 00253

Definition: This field is defined for any use by the filler (diagnostic service) and in Australia has a specific usage to allow transmission of values not allowed for in the international standard.

Example: DR=UMA2P,LN=16-72012244,RC=Y

The ST field is encoded with repeating name=value pairs separated by commas. e.g. |name=value,name=value,name=value|

The current allowable codes are:

Code	Meaning
AUSEHR	My Health Record consent flag. For example AUSEHR=Y indicates that consent has been given for this report to be uploaded to the My Health Record.
CP	Copy result - this is a copy result i.e., the receiving doctor is not the requesting doctor. An example entry is "CP=Y".
DR	Provider code used by laboratory
LN	Laboratory Number. The lab assigns a unique number for an episode of testing. This differs from the Filler order number Entity identifier, which must be unique for each report transmitted, but the Laboratory number is potentially common to many reports.
RC	Request complete "RC=Y". This indicates all tests are complete for this order ORC Placer Group number.

When transmitted all reserved HL7 delimiters must be escaped and the OBR-20 ST result extracted, unescaped and then parsed as a comma separated name=value pairs.

e.g. |LN=2016-1234-XYZ\T\LBA| is extracted as LN=2016-1234-XYZ&LBA

4.4.1.21 OBR-21 Filler field 2 (ST) 00254

Definition: This field is similar to filler field #1.

To be valued by the filler of the order. This data element can be used for contact detail for OBR-32 to OBR-35.

4.4.1.22 OBR-22 Results rpt/status chng - date/time (TS) 00255

Definition: This field specifies the date/time results reported or status changed. This field is used to indicate the date and time that the results are composed into a report and released, or that a status, as defined in ORC-5-order status, is entered or changed. (This is a results field only.) When other applications (such as office or clinical database applications) query the laboratory application for untransmitted results, the information in this field may be used to control processing on the communications link. Usually, the ordering service would want only those results for which the reporting date/time is greater than the date/time the inquiring application last received results.

To be valued by the filler of the order. If time is transmitted it should be specified to the minimum precision of minutes and the time zone must be included.

4.4.1.23 OBR-23 Charge to practice (CM) 00256

Components: <dollar amount (MO)> ^ <charge code (CE)>

Subcomponents of dollar amount: <quantity (NM)> & <denomination (ID)>

Subcomponents of charge code: <identifier (ST)> & <test (ST)> & <name of coding system (IS)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (IS)>

Definition: This field is the charge to the ordering entity for the studies performed when applicable. The first component is a dollar amount when known by the filler. The second is a charge code when known by the filler (results only).

To be valued by the filler of the order.

4.4.1.24 OBR-24 Diagnostic serv sect ID (ID) 00257

Definition: This field is the section of the diagnostic service where the observation was performed. If the study was performed by an outside service, the identification of that service should be recorded here.

Refer to HL7 Table 0074 - Diagnostic service section ID (see page 225) for valid entries. This field is required in Australian implementations to indicate to the placer system which clinical area to display the results.

HL7 Table 0074 - Diagnostic service section ID

Value	Description
AU	Audiology
BG	Blood Gases

Value	Description
BLB	Blood Bank
CG	Cytogenetics
CUS	Cardiac Ultrasound
CTH	Cardiac Catheterization
CT	CAT Scan
CH	Chemistry
CP	Cytopathology
EC	Electrocardiac (e.g. ECG, EEC, Holter)
EN	Electroneuro
GE †	Genetics
HM	Haematology
ICU	Bedside ICU Monitoring
IMM	Immunology
LAB	Laboratory (for multiple departments within the same OBR).
MB	Microbiology
MCB	Mycobacteriology
MYC	Mycology
NMR	Nuclear Magnetic Resonance
NMS	Nuclear Medicine Scan
NRS	Nursing Services Measures
OUS	OB Ultrasound
OT	Occupational Therapy
OTH	Other
OSL	Outside Lab
PHR	Pharmacy

Value	Description
PT	Physical Therapy
PHY	Physician (Hx. Dx, admission note, etc)
PF	Pulmonary Function
RAD	Radiology
RUS	Radiology Ultrasound
RC	Respiratory Care (therapy)
RT	Radiation Therapy
RX	Radiograph
SR	Serology
SP	Histology and Anatomical Pathology
TX	Toxicology
VUS	Vascular Ultrasound
VR	Virology
XRC	Cineradiograph

Note: † An Australian extension to the laboratory department code.

4.4.1.25 OBR-25 Result status (ID) 00258

Definition: This field is the status of results for this order. This conditional field is required whenever the OBR is contained in a report or referral message. It is not required as part of an initial order.

There are two methods of sending status information. If the status is that of the entire order, use ORC-15- order effective date/time and ORC-5-order status. If the status pertains to the order detail segment, use OBR-25-result status and OBR-22-results report/status change - date/time. If both are present, the OBR values override the ORC values. This field would typically be used in a response to an order status query where the level of detail requested does not include the OBX segments. When the individual status of each result is necessary, OBX-11- observ result status may be used. In the Australian environment, when any part of a report is corrected, a complete report, containing all the OBX segments should be transmitted with an OBR-25 status of 'C'. The individually updated OBX segments can be flagged with their own result status in OBX-11.

Refer to HL7 Table 0123 - Result status (see page 227) for valid OBR Result Status entries.

HL7 Table 0123 - Result status

Value	Description
O	Order received; specimen not yet received
I	No results available; specimen received, procedure incomplete
S	No results available; procedure scheduled, but not done
A	Some, but not all, results available
P	Preliminary: A verified early result is available, final results not yet obtained
C	Correction to results
R	Results stored; not yet verified
F	Final results; results stored and verified. Can only be changed with a corrected result.
X	No results available; Order canceled.
Y	No order on record for this test. (Used only on queries)
Z	No record of this patient. (Used only on queries)

4.4.1.26 OBR-26 Parent result (CM) 00259

Not used in Australian messages. Use observation Sub-ID in OBX-4 to link results

4.4.1.27 OBR-27 Quantity/timing (TQ) 00221

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ID)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field contains information about how many services to perform at one service time and how often the service times are repeated, and to fix duration of the request. See Section 7.4.1.27, “Quantity/Timing (TQ) Definition.” of HL7 International V2.4

ORC-7-quantity/timing is the same as OBR-27-quantity/timing. If the ORC-7 and OBR-27 are both valued, then both should be valued exactly the same. If the quantity/timing is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments. For example, if an OBR segment describes a unit of blood, this field might request that three (3) such units be given on successive mornings. In this case ORC-7-quantity/timing would be “1^XQAM^X3”. ORC-7-quantity/timing is the same as OBR-27-quantity/timing.

If time is transmitted it should be specified to the minimum precision of minutes and the time zone must be included.

Note: In the Australian context only components 4 "start date/time" and 6 "priority" are used of the TQ data type.

4.4.1.28 OBR-28 Result copies to (XCN) 00260

Components: <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type(ID)> Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is the people who are to receive copies of the results.

In the Australian setting Medicare provider numbers are used to provide a location specific identifier.

Variance: While the International standard restricts this to 5 copy doctors, the Australian standard does not have this restriction and allows an unlimited number.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

4.4.1.29 OBR-29 Parent (CM) 00261

Not used in Australian messages. Use observation Sub-ID in OBX-4 to link results.

4.4.1.30 OBR-30 Transportation mode (ID) 00262

Definition: This field identifies how (or whether) to transport a patient, when applicable. Refer to HL7 Table 0124 - Transportation mode for valid codes.

HL7 Table 0124 - Transportation mode

Value	Description
CART	Cart - patient travels on cart or gurney
PORT	The examining device goes to patient's location
WALK	Patient walks to diagnostic service
WHLC	Wheelchair

4.4.1.31 OBR-31 Reason for study (CE) 00263

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Snomed-CT AU[63] is a recommended source terminology for this field.

e.g. 274640006^Fever with chills (finding)^SCT

4.4.1.32 OBR-32 Principal result interpreter (CM) 00264

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR. III) (ST)> & <prefix (e.g., DR)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the physician or other clinician who interpreted the observation and is responsible for the report content. In the Australian context this field may be used for the billing doctor information.

This field should be valued where the original authoring provider for the content is known.

4.4.1.33 OBR-33 Assistant result interpreter (CM) 00265

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR. III) (ST)> & <prefix (e.g., DR)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the clinical observer who assisted with the interpretation of this study.

4.4.1.34 OBR-34 Technician (CM) 00266

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR. III) (ST)> & <prefix (e.g., DR)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the performing technician.

4.4.1.35 OBR-35 Transcriptionist (CM) 00267

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

63 http://browser.ihtsdotools.org/?perspective=full&conceptId1=404684003&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=46011000052107

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR. III) (ST)> & <prefix (e.g., DR)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the report transcriber.

4.4.1.36 OBR-36 Scheduled - date/time (TS) 00268

Definition: This field is the date/time the filler scheduled an observation, when applicable (e.g., action code in OBR-11-specimen action code = “S”). This is a result of a request to schedule a particular test and provides a way to inform the Placer of the date/time a study is scheduled (result only).

4.4.1.37 OBR-37 Number of sample containers (NM) 01028

Definition: This field identifies the number of containers for a given sample. For sample receipt verification purposes; may be different from the total number of samples which accompany the order.

4.4.1.38 OBR-38 Transport logistics of collected sample (CE) 01029

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field is the means by which a sample reaches the diagnostic service provider. This information is to aid the lab in scheduling or interpretation of results. Possible answers: routine transport van, public postal service, etc. If coded, requires a user-defined table.

4.4.1.39 OBR-39 Collector's comment (CE) 01030

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field is for reporting additional comments related to the sample. If coded, requires a user-defined table. If only free text is reported, it is placed in the second component with a null in the first component, e.g., ^difficult clotting after venipuncture and ecchymosis.

Snomed-CT AU[64] is a recommended source terminology for this field.

e.g. 161156004[65]^Language difficulty (finding)^SCT

4.4.1.40 OBR-40 Transport arrangement responsibility (CE) 01031

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field is an indicator of who is responsible for arranging transport to the planned diagnostic service. Examples: Requester, Provider, Patient. If coded, requires a user-defined table

64 http://browser.ihtsdotools.org/?perspective=full&conceptId1=404684003&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=46011000052107
65 http://browser.ihtsdotools.org/?perspective=full&conceptId1=161156004&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=46011000052107

4.4.1.41 OBR-41 Transport arranged (ID) 01032

Definition: This field is an indicator of whether transport arrangements are known to have been made.

Refer to HL7 Table 0224 - Transport arranged for valid codes.

HL7 Table 0224 - Transport arranged

Value	Description
A	Arranged
N	Not Arranged
U	Unknown

4.4.1.42 OBR-42 Escort required (ID) 01033

Definition: This field is an indicator that the patient needs to be escorted to the diagnostic service department. Note: The nature of the escort requirements should be stated in the OBR-43-planned patient transport comment field. See

HL7 Table 0225 - Escort required

Value	Description
R	Required
N	Not Required
U	Unknown

4.4.1.43 OBR-43 Planned patient transport comment (CE) 01034

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field is the code or free text comments on special requirements for the transport of the patient to the diagnostic service department. If coded, requires a user-defined table.

4.4.1.44 OBR-44 Procedure code (CE) 00393

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains a unique identifier assigned to the procedure, if any, associated with the Universal Service ID reported in field 4. User-defined Table 0088 - Procedure code is used as the HL7 identifier for the user-defined table of values for this field. This field is a CE data type for compatibility with clinical and ancillary systems.

User-defined Table 0088 - Procedure code

Value	Description
	No suggested values defined

4.4.1.45 OBR-45 Procedure code modifier (CE) 01316

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the procedure code modifier to the procedure code reported in field 44, when applicable. Procedure code modifiers are defined by regulatory agencies. Multiple modifiers may be reported. User-defined Table 0088 - Procedure code (see page 232) is used as the HL7 identifier for the user-defined table of values for this field.

4.4.1.46 OBR-46 Placer supplemental service information (CE) 01474

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains supplemental service information sent from the placer system to the filler system for the universal procedure code reported in OBR-4 Universal Service ID. This field will be used to provide ordering information detail that is not available in other, specific fields in the OBR segment. Multiple supplemental service information elements may be reported. Refer to User-defined table 0411 - Supplemental service information values for suggested values. This field can be used to describe details such as whether study is to be done on the right or left, for example where the study is of the arm and the order master file does not distinguish right from left or whether the study is to be done with or without contrast (when the order master file does not make such distinctions).

Snomed-CT AU[66] is a recommended source terminology for this field.

e.g. 266919005[67]^Never smoked tobacco (finding)^SCT

4.4.1.47 OBR-47 Filler supplemental service information (CE) 01475

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains supplemental service information sent from the filler system to the placer system for the procedure code reported in OBR-4 Universal Service ID. This field will be used to report ordering information details that is not available in other, specific fields in the OBR segment. Typically it will reflect the same information as was sent to the filler system in OBR-46-Placer supplement information unless the order was modified in which case the filler system will report what was actually performed using this field. Multiple supplemental service

66 http://browser.ihtsdotools.org/?perspective=full&conceptId1=404684003&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=46011000052107
67 http://browser.ihtsdotools.org/?perspective=full&conceptId1=266919005&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=46011000052107

information elements may be reported. Refer to *User-defined Table 0411 - Supplemental service information values* for suggested values.

This field can be used to describe details such as whether study is to be done on the right or left, for example where the study is of the arm and the order master file does not distinguish right from left or whether the study is to be done with or without contrast (when the order master file does not make such distinctions).

User-defined Table 0411 - Supplemental service information values

Value	Description
1ST	First
2ND	Second
3RD	Third
4TH	Fourth
5TH	Fifth
ANT	Anterior
A/P	Anterior/Posterior
BLT	Bilateral
DEC	Decubitus
DST	Distal
LAT	Lateral
LFT	Left
LLQ	Left Lower Quadrant
LOW	Lower
LUQ	Left Upper Quadrant
MED	Medial
OR	Operating Room
PED	Pediatric
POS	Posterior
PRT	Portable
PRX	Proximal

Value	Description
REC	Recumbent
RLQ	Right Lower Quadrant
RGH	Right
RUQ	Right upper Quadrant
UPP	Upper
UPR	Upright
WCT	With Contrast
WOC	Without Contrast
WSD	With Sedation

Individual implementations may extend this table using other appropriate vocabularies.

4.4.2 OBX - Observation/Result segment

The OBX segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. Its principal mission is to carry information about observations in report messages. But the OBX can also be part of an observation order (see Section 4.2, “Order Message Definitions” of HL7 International V2.4). In this case, the OBX carries clinical information needed by the filler to interpret the observation the filler makes. For example, an OBX is needed to report the inspired oxygen on an order for a blood oxygen to a blood gas lab, or to report the menstrual phase information which should be included on an order for a pap smear to a cytology lab. OBX segments are also found in other HL7 messages that need to include relevant clinical information.

Following the final atomic OBX segment are the OBX display segment(s) with the presented report. There must be at least one display segment per OBR segment and where there is more than one display type it must contain the same report detail. If there is a digital signature it will appear after the OBX display segments.

HL7 Attribute Table – OBX – Observation/Result

SEQ	LEN	DT	OPT	RP#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00569	Set ID - OBX
2	3**	ID	C		0125	00570	Value Type
3	250	CE	R			00571	Observation Identifier
4	20	ST	C			00572	Observation Sub-ID
5	16 MB†	*	C	Y		00573	Observation Value
6	250	CE	O			00574	Units

SEQ	LEN	DT	OPT	RP#	TBL#	ITEM#	ELEMENT NAME
7	60	ST	O			00575	References Range
8	5	IS	O	Y/5	0078	00576	Abnormal Flags
9	5	NM	O			00577	Probability
10	2	ID	O	Y	0080	00578	Nature of Abnormal Test
11	1	ID	R		0085	00579	Observation Result Status
12	26	TS	O			00580	Date last Observation Normal value
13	20	ST	O			00581	User Defined Access Checks
14	26	TS	O			00582	Date/Time of the Observation
15	250	CE	O			00583	Producers ID
16	250	XCN	O	Y		00584	Responsible Observer
17	250	CE	O	Y		00936	Observation Method
18	250***	EI	O	Y		01479	Equipment Instance Identifier
19	26	TS	O			01480	Date/Time of the Analysis

** ALERT: The field length of OBX-2 of three characters for Australian usage is a variance to the HL7 V 2.4 field length of two characters.

*** ALERT: The field length of OBX-18 of 250 characters for Australian usage is a variance to the HL7 V 2.4 field length of 22 characters.

† ALERT: The field length of OBX-5 is a variable number of characters to a maximum of up to 16 MB, though specific trading partner agreements may agree to other maximum sizes.

4.4.2.1 OBX-1 Set ID - OBX (SI) 00569

Definition: This field contains the sequence number.

4.4.2.2 OBX-2 Value type (ID) 00570

Definition: This field contains the format of the observation value in OBX. It must be valued if OBX-11- Observation result status is not valued with an ‘X”. If the value is CE then the result must be a coded entry. When the value type is FT then the results are bulk text. The valid values for the value type of an observation are listed in *HL7 Table 0125 - Value type*. The observation value must be represented according to the format for the data types defined earlier in Data Types. Although NM is a valid type, observations which are usually reported as numbers will sometimes have a non numeric value e.g., >300 to indicate the result was off-scale for the instrument. In the example, ">300", ">" is a symbol and the digits are considered a numeric value. The SN (structured numeric) data type accommodates such reporting and, in addition, permits the receiving system to interpret the magnitude.

All HL7 data types are valid, and are included in *Table 0125* except CM, CQ, SI, and ID. For a CM definition to have meaning, the specifics about the CM must be included in the field definition. OBX-5- observation value is a general field definition that is influenced by the data type OBX-3, so CMs are undefined in this context. CQ is invalid because units for OBX-5-observation value are always specified explicitly in an OBX segment with OBX-6 units. SI is invalid because it only applied to HL7 message segments, and ID because it requires a constant field definition. The RP value (reference pointer) must be used if the actual observation value is not sent in OBX but exists somewhere else. For example, if the observation consists of an image (document or medical), the image itself may not necessarily be sent in OBX. The sending system may in that case opt to send a reference pointer. The receiving system can use this reference pointer whenever it needs access to the actual image through other interface standards, e.g., DICOM, or through appropriate servers.

HL7 Table 0125 - Value type

Value	Description
~~AD~~	~~Address~~
CE	Coded Entry
CNE	Coded with no exceptions
CWE	Coded with exceptions
CF	Coded Element with Formatted values
CK	Composite ID With Check Digit
CN	Composite ID And Name
CP	Composite Price
CX	Extended Composite ID With Check Digit
DR	Date/Time Range
DT	Date
ED	Encapsulated Data
EI	Entity Identifier
FT	Formatted Text (Display)
MO	Money
NM	Numeric
~~PN~~	~~Person Name~~
RP	Reference Pointer
SN	Structured Numeric

Value	Description
ST	String Data.
TM	Time
~~TN~~	~~Telephone Number~~
TS	Time Stamp (Date & Time)
~~TX~~	~~Text Data (Display)~~
XAD	Extended Address
XCN	Extended Composite Name And Number For Persons
XON	Extended Composite Name And Number For Organizations
XPN	Extended Person Name
XTN	Extended Telecommunications Number

Strikethrough Elements should not be used in Australian implementations. FT should be used instead of TX. The extended version of datatypes should be used rather than datatypes from prior versions of HL7 V2.

The full definition of these data types is given in Data Types.

Note: The field length of OBX-2 of three characters for Australian usage is a variance to the HL7 V 2.4 field length of two characters.

4.4.2.3 OBX-3 Observation identifier (CE) 00571

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains a unique identifier for the observation. The format is that of the Coded Element (CE). Example: 11259-9^Hepatitis C Virus RNA Qualitative^LN^HCVRQL^Hepatitis C Virus RNA Qualitative^NATA2623.

In most systems the identifier will point to a terminology or master observation table that will provide other attributes of the observation that may be used by the receiving system to process the observations it receives.

The first triplet of the CE data type will contain a universal identifier i.e. LOINC or SNOMED. If both LOINC and SNOMED are sent then LOINC is to be in the first triplet. Where two codes are sent, these codes must be codes for the same concept.

The terminology for observation identification must come from the RCPA pathology terminology reference set (available from the NCTS), where an appropriate code exists.

When local codes are used as the first identifier in this field we strongly encourage sending a universal identifier as well to permit receivers to equivalence results from different providers of the same service (e.g., a hospital lab and commercial lab that provides serum potassium to a nursing home). LOINC® is an HL7 approved code system for the Observation identifier. It covers observations and measurements, such as laboratory tests, physical findings, radiology studies, and claims attachments and can be obtained from loinc.org[68]. LOINC codes, selected by the

68 http://loinc.org

RCPA for Standards for Pathology Informatics in Australia (SPIA) reporting terminology reference sets which can be obtained at RCPA website[69] or from the National Clinical Terminology Service[70].

HL7 V2.6, Table 0396 Coding system table (see page 142) has the correct codes to be used for the terminology systems e.g. LN for LOINC and SCT for SNOMED CT.

On occasions no code will be defined or available and only the text component of the CE will be valued. Where a coded term exists in a standard terminology then the identifier and coding system name component should be valued.

There are specific LOINC codes used for result and report comments, template IDs and section headings detailed below in Section 4.6 (Specific LOINC codes) that modify the display of OBX segments and should be handled specifically.

4.4.2.4 OBX-4 Observation sub-ID (ST) 00572

Definition: This field is used to distinguish between multiple OBX segments with the same observation ID organized under one OBR. For example, a chest X-ray report might include three separate diagnostic impressions. The standard requires three OBX segments, one for each impression. By putting a 1 in the Sub-ID of the first of these OBX segments, 2 in the second, and 3 in the third, we can uniquely identify each OBX segment for editing or replacement.

In Microbiology there may be multiple organisms isolated and each organism can have sensitivities specific to each isolate. This is reported under one OBR segment and the organism and its sensitivities are linked by using "1" for the Sub-ID fore first organism and "2" for the Sub-ID for the second organism etc. This links the relevant data together for machine processing even though the same OBX-3 (Observation Identifier) may be used multiple times. An example of a micro example is below.

Microbiology reporting with multiple organisms

```
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY^L|Acme Pathology^1001^AUSNATA|||20050420221113+1000||ORU^R01^ORU_R01|
20050420.736715|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||AL||AUS
PID|1|...
PV1|1|O||||||0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN|
0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN
ORC|RE||05-6690882-URC-0^Acme Pathology^1001^AUSNATA||CM|||||||
0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN
OBR|1||05-6690882-URC-0^Acme Pathology^1001^AUSNATA|URC^URINE MICRO^1001|||200503081300+1000|||||||
200503081928+1000||0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN||||DR=MME,LN=05-6690882,RC=Y||
200504181642+1000||MB|F||^^^200503080000+1000|0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN||||
Reporting Pathologist
OBX|1|ST|19159-3^Collection Method^LN||Mid stream urine||||||F|||200503082316+1000
OBX|2|ST|25428-4^Glucose^LN||Negative||||||F|||200503082350+1000
OBX|3|ST|2514-8^Ketones^LN||Negative||||||F|||200503082350+1000
OBX|4|ST|20454-5^Protein^LN||Negative||||||F|||200503082350+1000
OBX|5|NM|30405-5^Leucocytes^LN||30|10*6/L^10*6/L^UCUM|<10|+|||F|||200503090015+1000
OBX|6|NM|30391-7^Erythrocytes^LN||40|10*6/L^10*6/L^UCUM|<10|+|||F|||200503090015+1000
OBX|7|SN|30383-4^Epithelial cells^LN||<^10|10*6/L^10*6/L^UCUM|||||F|||200503090015+1000
OBX|8|ST|8269-3^^LN|1|Organism 1||||||F
OBX|9|CE|630-4^Bacteria Identified^LN|1|112283007^Escherichia coli^SCT|||A|||F
OBX|10|SN|19090-0^Colony Count^LN|1|>^10|||A|||F
OBX|11|ST|18864-9^Amp/Amoxycillin^LN|1|S|||S|||F
OBX|12|ST|18862-3^Amoxycillin+Clavulanic acid^LN|1|S|||S|||F
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69 http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads
70 https://www.healthterminologies.gov.au/ncts/#/access

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OBX|13|ST|18897-9^Cephalexin^LN|1|S|||S|||F
OBX|14|ST|18955-5^Nitrofurantoin^LN|1|S|||S|||F
OBX|15|ST|18956-3^Norfloxacin^LN|1|S|||S|||F
OBX|16|ST|18997-7^Trimethoprim^LN|1|S|||S|||F
OBX|17|ST|18928-2^Gentamicin^LN|1|S|||S|||F
OBX|18|ST|8270-1^^LN|2|Organism 2||||||F
OBX|19|CE|630-4^Bacteria Identified^LN|2|131269001^Klebsiella^SCT|||A|||F
OBX|20|SN|19090-0^Colony Count^LN|2|>^100|||A|||F
OBX|21|ST|18864-9^Amp/Amoxycillin^LN|2|R|||R|||F
OBX|22|ST|18862-3^Amoxycillin+Clavulanic acid^LN|2|R|||R|||F
OBX|23|ST|18897-9^Cephalexin^LN|2|R|||R|||F
OBX|24|ST|18955-5^Nitrofurantoin^LN|2|R|||R|||F
OBX|25|ST|18956-3^Norfloxacin^LN|2|S|||S|||F
OBX|26|ST|18997-7^Trimethoprim^LN|2|R|||R|||F
OBX|27|ST|18928-2^Gentamicin^LN|2|S|||S|||F
OBX|28|FT|8251-1^Generated comment^LN||\.br\May be suggestive of UTI in the presence of symptoms.
\.br\||||||F
```

The use of the observation Sub-ID can be extended to use a dotted Sub-ID notation which allows a hierarchy to be defined. This can in addition be linked back to a template ID to relate the OBX segments to the metadata definition. An example is illustrated below. The LOINC code "70949-3" can be used to indicate a section header. This is used in the Differential section header below.

Extended use of Sub-ID

```
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY:3.1.2^L|Acme Pathology^1001^AUSNATA|||20160713174923+1000||
ORU^R01^ORU_R01|07131749373-8576|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||AL||AUS
PID|1|...
PV1|1|O||||||0626518F^DOCTOR^PAUL ^^^DR^^^AUSHICPR^L^^^UPIN|0626518F^DOCTOR^PAUL
^^^DR^^^AUSHICPR^L^^^UPIN|||||||N
ORC|RE||16-123456^Acme Pathology^1001^AUSNATA||CM|||||||0626518F^DOCTOR^PAUL ^^^DR^^^AUSHICPR^L^^^UPIN
OBR|1||16-123456^Acme Pathology^1001^AUSNATA|26604007^Full Blood Count^SNOMED-CT^CBC^^AUSNATA.15454||
20160713+1000|20160713+1000|||||||||0626518F^DOCTOR^PAUL ^^^DR^^^AUSHICPR^L^^^UPIN||From Acme
Pathology"XX07131747062-4944" 13.07.2016||LN=16-123456||201607131748+1000||HM|F||^^^20160713+1000|
0626518F^DOCTOR^PAUL ^^^DR^^^AUSHICPR^L^^^UPIN~0626518F^DOCTOR^PAUL^^^DR^^^AUSHICPR^L^^^UPIN||||
0626518F&DOCTOR&PAUL &&&Dr.&&&AUSHICPR
OBX|1|RP|60572-5^^LN^ENTRY^^EN 13606|1|CEN.FULL-BLOOD-COUNT.v3^FULL BLOOD COUNT&99A-
B758ABA873EFC4A1&L^TX^Octet-stream||||||F
OBX|2|NM|718-7^Haemoglobin^LN|1.1.1|118|g/L^g/L^UCUM|115-165||||F
OBX|3|NM|789-8^Red cell count^LN|1.1.2|3.9|10*12/L^10*12/L^UCUM|3.8-5.8||||F
OBX|4|NM|4544-3^Haematocrit^LN|1.1.3|0.39|L/L^L/L^UCUM|0.37-0.47||||F
OBX|5|NM|787-2^Mean cell volume^LN|1.1.4|88|fL^fL^UCUM|80-100||||F
OBX|6|NM|785-6^Mean cell haemoglobin^LN|1.1.5|28.0|pg^pg^UCUM|26.5-33.0||||F
OBX|7|NM|786-4^MCHC^LN|1.1.6|320|g/L^g/L^UCUM|310-360||||F
OBX|8|NM|777-3^Platelet count^LN|1.1.7|190|10*9/L^10*9/L^UCUM|150-400||||F
OBX|9|NM|6690-2^White cell count^LN|1.1.8|7.8|10*9/L^10*9/L^UCUM|4.0-11.0||||F
OBX|10|CE|70949-3^^LN|1.1.9|DIFF^Differential^L||||||F
OBX|11|NM|26499-4^Neutrophils^LN|1.1.9.1|4.0|10*9/L^10*9/L^UCUM|2.0-7.5||||F
OBX|12|NM|26474-7^Lymphocytes^LN|1.1.9.2|3.2|10*9/L^10*9/L^UCUM|1.0-4.0||||F
OBX|13|NM|26484-6^Monocytes^LN|1.1.9.3|0.4|10*9/L^10*9/L^UCUM|0.2-1.0||||F
OBX|14|NM|26449-9^Eosinophils^LN|1.1.9.4|0.2|10*9/L^10*9/L^UCUM|0-0.4||||F
OBX|15|NM|26444-0^Basophils^LN|1.1.9.5|0.0|10*9/L^10*9/L^UCUM|0-0.1||||F
```

4.4.2.5 OBX-5 Observation value (*) 00573

Definition: This field contains the value observed by the observation producer. OBX-2-value type contains the data type for this field according to which observation value is formatted.

Representation:

This field contains the value for the OBX-3-observation identifier of the same OBX segment. Depending upon the observation, the data type may be a number (e.g., a respiratory rate), a coded answer (e.g., a pathology impression recorded as SNOMED), or a date/time (the date/time that a unit of blood is sent to the ward). An observation value is always represented as the data type specified in OBX-2-value type of the same segment. Whether numeric or short text, the answer shall be recorded in ASCII text.

Reporting logically independent observations:

The main sections of dictated reports, such as radiologic studies or history and physicals, are reported as separate OBX segments. In addition, each logically independent observation should be reported in a separate OBX segment, i.e. one OBX segment should not contain the result of more than one logically independent observation. This requirement is included to assure that the contents of OBX-6-units, OBX- 8-abnormal flags, and OBX-9-probability can be interpreted unambiguously. The electrolytes and vital signs batteries, for example, would each be reported as four separate OBX segments. Two diagnostic impressions, e.g., congestive heart failure and pneumonia, would also be reported as two separate OBX segments whether reported as part of a discharge summary or chest X-ray report. Similarly, two bacterial organisms isolated in a single bacterial culture would be reported as two separate OBX segments.

The combination of OBX-3 (Observation Identifier) and OBX-4 (Observation Sub-ID) should be unique in a result. In Australia when a report is updated the complete report, including all OBX segments and an OBR with a OBR-25 (Result Status) of 'C' should be sent.

The field length of OBX-5 is a variable number of characters depending on the Data Type, up to a maximum of up to 16 MB for ED/FT segments, though specific trading partner agreements may agree to other maximum sizes.

4.4.2.6 OBX-6 Units (CE) 00574

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Background: When an observation’s value is measured on a continuous scale, one must report the measurement units within the units field of the OBX segment.

The Unified Code for Units of Measure (UCUM) has been devised by the Regenstrief Institute. The UCUM system gives just one logical, unambiguous way of describing the units and should be used in Pathology messages within Australia and is the preferred coding system for units. There are two variants of UCUM which are case sensitive and case insensitive, it is the case sensitive variant which has been chosen.

The preferred units of measure which are to be used in Australia are available by test on the RCPA website[71].

Example: mL/min/{1.73_m2}^mL/min/1.73m2^UCUM

4.4.2.7 OBX-7 References range (ST) 00575

Components: for numeric values in the format:
a) lower limit-upper limit (when both lower and upper limits are defined, e.g., for potassium 3.5 - 4.5)
b) > lower limit (if no upper limit, e.g., >10)

71 http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads

c) < upper limit (if no lower limit, e.g., <15)
alphabetical values: the normal value may be reported in this location

Definition: When the observation quantifies the amount of a toxic substance, then the upper limit of the range identifies the toxic limit. If the observation quantifies a drug, the lower limits identify the lower therapeutic bounds and the upper limits represent the upper therapeutic bounds above which toxic side effects are common.

Numeric result values should have a suitable reference range.

4.4.2.8 OBX-8 Abnormal flags (IS) 00576

Definition: This field contains a table lookup indicating the normalcy status of the result. We strongly recommend sending this value when applicable. (See ASTM 1238 - review for more details). Refer to User-defined Table 0078 - Abnormal flags for valid entries.

When the laboratory can discern the normal status of a textual report, such as chest X-ray reports or microbiologic culture, these should be reported as N when normal and A when abnormal. Multiple codes, e.g., abnormal and worse, would be separated by a repeat delimiter, e.g., A~W.

User-defined Table 0078 - Abnormal flags

Value	Description
In the Australian context the three-tier scale is:	
+	At least one level above normal limit
++	Two levels above
+++	Three levels above
-	At least one level below normal limit
--	Two levels below
---	Three levels below
In the Australian context the two-tier scale is:	
L	Below low normal
H	Above high normal
LL	Below lower panic limits
HH	Above upper panic limits
For Microbiology use:	
S	Susceptible. Indicates for microbiology susceptibilities only.
R	Resistant. Indicates for microbiology susceptibilities only.
I	Intermediate. Indicates for microbiology susceptibilities only.

Value	Description
For non-numeric results:	
A	Abnormal (applies to non-numeric results)
N	Normal (applies to non-numeric results)

4.4.2.9 OBX-9 Probability (NM) 00577

Definition: This field contains the probability of a result being true for results with categorical values. It mainly applies to discrete coded results. It is a decimal number represented as an ASCII string that must be between 0 and 1, inclusive.

4.4.2.10 OBX-10 Nature of abnormal test (ID) 00578

Definition: This field contains the nature of the abnormal test. Refer to HL7 Table 0080 - Nature of abnormal testing for valid values. As many of the codes as apply may be included, separated by repeat delimiters. For example, normal values based on age, sex, and race would be codes as A~S~R.

HL7 Table 0080 - Nature of abnormal testing

Value	Description
A	An age-based population
N	None - generic normal range
R	A race-based population
S	A sex-based population

4.4.2.11 OBX-11 Observation result status (ID) 00579

Definition: This field contains the observation result status.

Refer to HL7 table 0085 - Observation result status codes interpretation (see page 244) for valid values.

This field reflects the current completion status of the results for one Observation Identifier. It is a required field. Previous versions of HL7 stated this implicitly by defining a default value of “F.” Code F indicates that the result has been verified to be correct and final. Code W indicates that the result has been verified to be wrong (incorrect); a replacement (corrected) result may be transmitted later. Code C indicates that data contained in the OBX-5-observation value field are to replace previously transmitted (verified and) final result data with the same observation ID (including suffix, if applicable) and observation sub-ID usually because the previous results were wrong. Code D indicates that data previously transmitted in a result segment with the same observation ID (including suffix) and observation sub-ID should be deleted.

When changing or deleting a result, multiple OBX segments with the same observation ID and observation sub-ID are replaced or deleted as a unit. Normal progression of results through intermediate (e.g., ‘gram positive cocci’) to

final (e.g., ‘staphylococcus aureus’) should not be transmitted as C (correction); they should be transmitted as P or S (depending upon the specific case) until they are final.

Multiple preliminary results may be reported at different observation times. e.g. a microbiology culture.

HL7 Table 0085 - Observation result status codes interpretation

Value	Description
C	Record coming over is a correction and thus replaces a final result
D	Deletes the OBX record
F	Final results; Can only be changed with a corrected result.
I	Specimen in lab; results pending
N	Not asked; used to affirmatively document that the observation identified in the OBX was not sought when the universal service ID in OBR-4 implies that it would be sought.
O	Order detail description only (no result)
P	Preliminary results
R	Results entered -- not verified
S	Partial results
X	Results cannot be obtained for this observation
U	Results status change to final without retransmitting results already sent as ‘preliminary.’ E.g., radiology changes status from preliminary to final
W	Post original as wrong, e.g., transmitted for wrong patient

4.4.2.12 OBX-12 Date last observation normal value (TS) 00580

Definition: This field contains the changes in the observation methods that would make values obtained from the old method not comparable with those obtained from the new method. Null if there are no normals or units. If present, a change in this date compared to date-time recorded, the receiving system’s test dictionary should trigger a manual review of the results to determine whether the new observation ID should be assigned a new ID in the local system to distinguish the new results from the old.

4.4.2.13 OBX-13 User defined access checks (ST) 00581

Definition: This field permits the producer to record results-dependent codes for classifying the observation at the receiving system.

However, there are a few cases when such controls vary with the value of the observation in a complex way that the receiving system would not want to re-calculate. An example is an antimicrobial susceptibility result. Some systems prefer to display only the susceptibility results of inexpensive antimicrobials depending upon the organism, the source of the specimen and the patient’s allergy status. The sending service wants to send all of the susceptibilities

so that certain privileged users (e.g., Infectious Disease specialists) can review all of the results but nonprivileged users would see only the “preferred” antimicrobials to which the organism was susceptible. We expect that other cases also occur.

4.4.2.14 OBX-14 Date/time of the observation (TS) 00582

Definition: This field is required in two circumstances. The first is when the observations reported beneath one report header (OBR) have different dates/times. This could occur in the case of queries, timed test sequences, or clearance studies where one measurement within a battery may have a different time than another measurement. It is also needed in the case of OBX segments that are being sent by the placer to the filler, in which case the date of the observation being transmitted is likely to have no relation to the date of the requested observation.

In France, requesting services routinely send a set of the last observations along with the request for a new set of observations. The date of these observations is important to the filler laboratories. In all cases, the observation date-time is the physiologically relevant date-time or the closest approximation to that date-time. In the case of tests performed on specimens, the relevant date-time is the specimen’s collection date-time. In the case of observations taken directly on the patient (e.g., X-ray images, history and physical), the observation date-time is the date-time that the observation was performed.

4.4.2.15 OBX-15 Producer's ID (CE) 00583

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains a unique identifier of the responsible producing service. It should be reported explicitly when the test results are produced at outside laboratories, for example. When this field is null, the receiving system assumes that the observations were produced by the sending organization. For example: <identifier> = NATA laboratory number; <name of coding system> = ‘AUSNATA’.

4.4.2.16 OBX-16 Responsible observer (XCN) 00584

Components: In Version 2.3 and later, use instead of the CN data type. <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: When required, this field contains the identifier of the individual directly responsible for the observation (i.e., the person who either performed or verified it). In a nursing service, the observer is usually the professional who performed the observation (e.g., took the blood pressure). In a laboratory, the observer is the technician who performed or verified the analysis. The code for the observer is recorded as a CE data type. If the code is sent as a local code, it should be unique and unambiguous when combined with OBX-15-producer ID.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

4.4.2.17 OBX-17 Observation method (CE) 00936

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

This optional field can be used to transmit the method or procedure by which an observation was obtained when the sending system wishes to distinguish among one measurement obtained by different methods and the distinction is not implicit in the test ID. Chemistry laboratories do not usually distinguish between two different methods used to measure a given serum constituent (e.g., serum potassium) as part of the test name. See the LOINC® Users Manual3 for a more complete discussion of these distinctions. If an observation producing service wanted to report the method used to obtain a particular observation, and the method was NOT embedded in the test name, they can use this field.

The Centers for Disease Control and Prevention (CDC) Method Code (CDCM) is one candidate code system for reporting methods/instruments. EUCLIDES method codes are another. User defined tables are an alternative.

In Australia this field is used to transmit code that indicate if it is safe to combine results across labs (assuming same LOINC code). Refer to the examples at the section 4.13 Combining test values from different organisations (see page 258) below.

4.4.2.18 OBX-18 Equipment instance identifier (EI) 01479

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field identifies the Equipment Instance (e.g., Analyzer, Analyzer module, group of Analyzers,...) responsible for the production of the observation. This is the identifier from an institution's master list of equipment, where the institution is specified by the namespace ID or if it is blank, then by the “Producer’s ID” (OBX-15). It should be possible to retrieve from this master list the equipment type, serial number, etc., however it is not planned to transfer this information with every OBX. The repeating of this field allows for the hierarchical representation of the equipment (lowest level first), e.g., module of an instrument, instrument consisting of modules, cluster of multiple instruments, etc.

The field length of 250 characters for Australian usage is a variance to the HL7 V 2.4 field length of 22 characters.

4.4.2.19 OBX-19 Date/time of the analysis (TS) 01480

Definition: This field is used to transfer the time stamp associated with generation of the analytical result by the instrument specified in Equipment Instance Identifier (see above).

4.4.3 Addition OBX usage

4.4.3.1 Use of OBX for Specific Information

Instead of using prohibited message types and trigger event codes beginning with the letter “Z (conformance point HL7au:000020), the OBX segment offers sufficient versatility to cover the majority of requirements for localised content. The combined use of OBX-2 *Value type* and OBX-3 *Observation identifier* can be used to structure the type and format of the information. For example if the height and/or weight of the patient are required they would be transmitted as:

```
OBX|5|NM|8350-1^Weight^LN||75|kg^kilogram^UCUM|||+|||F|||200503090015+1000
OBX|6|NM|8302-2^Body height^LN||175|cm^centimetre^UCUM|||+|||F|||200503090015+1000
```

4.4.3.2 Use of OBX with Formatted Text (FT) in Headings

When an OBX segment contains Free Text (FT) data the value of OBX-3 Observation Identifier is not displayed to the user and the text is displayed across the full width of the users display window to allow for a minimum of 80 columns of text to be displayed. If fillers wish a heading to be displayed in association with FT OBX segments the heading text should be included within OBX-5 as part of the FT data. Systems displaying results should ensure that there is a minimum of 80 columns of displayable text and should also use a non proportional font to allow fillers to reliably format the text. Fillers have no control over the font used for display, but can assume that it is non proportional and there is sufficient room for 80 columns of character data to display without word wrapping.

4.5 Display Segments

Australia uses an extension to the HL7 conventions by including at least one, but potentially many OBX segments that contain a display orientated version of the data included in the message. Ideally the data should be transmitted in atomic form as well as a display orientated form, but in some cases only the display orientated data is transmitted. (In which case the display segment will be the only OBX segment present) These OBX segments are positioned as the *last OBX segments* and can be identified by the use of the coding scheme "AUSPDI" in OBX-3 Observation Identifier, Name of Coding System. There are multiple potential formats that the display orientated version of the data can be transmitted but all display segments should be equivalent and contain a rendering of all the data and (if atomic data is present) should not contain clinical results not included in the atomic data. For each display format there must be only one 'AUSPDI' OBX segment. The potential formats are given in the following table.

See conformance points section HL7au:000008 (see page 420).

Display Format codes

Identifier (ST)	Text (ST)*	Name of Coding System (IS)	OBX Value Type
RTF	Display Format in RTF	AUSPDI	ED
HTML	Display Format in HTML	AUSPDI	ED
PDF	Display Format in PDF	AUSPDI	ED
TXT	Display Format in Text	AUSPDI	FT
~~PIT~~ *	~~Display Format in PIT~~	~~AUSPDI~~	~~FT~~

- Only the Code and Coding System are significant and the text may be absent or vary from what is shown.
- *PIT display is deprecated and will be removed in future standards. Note that references to PIT are left in with "strikethrough" styling here to alert readers to its existence and that it is currently used in practice although not recommended for use by senders, receivers may find that they need to support it for practical reasons.

All sending systems should make at least one display format available to the user as it provides for a display format of the results that the pathologist is confident will convey the intended significance of the results. Due to limitations in receiving systems it is recommended that a text based format be included as one of the available display segments.

For receivers, when a display segment is shown, earlier atomic OBX segments should not be rendered (See HL7au:000008.1.6 (see page 422)). Where there is one or more display segments available only one should be visible at a time,

however the system must allow users to access the alternative formats provided. See HL7au:000008.1.1 (see page 421).

~~4.5.1 Using the PIT display format~~

~~This has been widely used in the past and is likely to be seen for some time, but is being phased out in favor of other formats. It does allow colour based highlighting and is lightweight.~~

~~Only the display lines of the PIT format should be used and applications should not depend on the patient demographics or copy doctors being present and these details should be obtained from the HL7. As in every field reserved HL7 characters and line breaks need to be escaped.~~

~~Example:~~

~~OBX|3|FT|PIT^Display format in PIT^AUSPDI||301 \.br\301 B12 - Folate\.br\301 \.br\301 \.br\301 \.br\301 Testing\.br\309 \.br\319 \.br\390 End of Report :\.br\||||||F~~

4.5.2 Using RTF Display format.

If this format is used the range of rtf supported by PMS systems may be much less than is supported by MS Word and only basic rtf features should be used. Senders SHOULD base64 encode the rtf as shown below as rtf can contain binary data outside the ASCII character set and usually contains many characters requiring escaping inside HL7.

Example:

OBX|2|ED|RTF^Display format in RTF^AUSPDI||MERIDIAN&MERIDIAN:3.1.2 [win32-i386]&L^TEXT^RTF^Base64^e1xydG...FsIE9iamVjdHN9||||||F

(Note that the RTF base64 encoded data has been shortened for display and is incomplete).

4.5.3 Using the HTML display Format

The HTML format uses XHTML and the details regarding the format of the html are given in the Appendix. XHTML display data should be base64 encoded in an ED segment. The XHTML should be valid xml. Any HTML display segment SHOULD be displayed with a compliant browser control. These are available of virtually all platforms an ensure reliable display of compliant XHTML. When handled correctly XHTML is the most inter-operable of all formats.

Example:

OBX|5|ED|HTML^Display format in HTML^AUSPDI||ECLIPSE&ECLIPSE:3.1.2 [win32-i386]&L^text^HTML^Base64^PGRpdj48ZG...+PC9kaXY+PC9kaXY+||||||F

4.5.4 Using the PDF Display format

While PDF is considered inter-operable there are issues with reliable display with various toolkits on different platforms and any PDF documents should be tested on a variety of viewers on different platforms. Features such as Encryption, password protection and restrictions on copying/Printing SHOULD NOT be used. Care should be taken not to depend on Fonts that may not be available on all platforms.

Example:

OBX|6|ED|PDF^Display in PDF Format^AUSPDI||MERIDIAN&MERIDIAN:3.1.2 [win32-i386]&L^application^pdf^Base64^JVBERi0xLjM...OQ0KJSVFT0YNCg==||||||F

Using Display Format in Text

This mechanism uses the display abilities of HL7 Free Text to produce a rendering of the whole report. The only text formatting available is highlighting which is usually implemented in receiving systems as bold. Text display segments use a value type of FT and the usual escaping of delimiters and Free Text formatting commands.

4.6 Specific LOINC codes

4.6.1 Result Comments

NTE segments are not used in the Australian setting but comments about individual results (A single OBX) or a report (All OBX segments under a OBR Segment) are supported by the use of OBX segments with specific LOINC codes. Result Comments are in an OBX segment immediately following the result OBX and report comments are contained in an OBX segment at the end of the report but before the display orientated OBX segments detailed in Section 4.5. The LOINC code in a Comment OBX Segment (In OBX-3) allows differentiation between result and report comments. Ideally result comments should be linked to result by use of OBX-4 Observation Sub-ID as well as the position in the message.

Comment Type	Start LOINC Code	End LOINC Code
Result Comments	15412-0	15431-0
Report Comments	8251-1	8270-1

Most Comment OBX segments are of type FT and no display of the code or text in OBX-3 is expected but comment OBX segments can be of other value types and OBX-3 should not be displayed in those cases either.

Example of report comment:

OBX|28|FT|8251-1^Generated comment^LN||\.br\May be suggestive of UTI in the presence of symptoms.\.br\||||||F

The value of OBX-3 "Generated Comment" SHOULD NOT be displayed as per FT display conventions.

4.6.2 Section Headings

In structured reports there may be a number of sections in a report and these OBX segments are defined by 2 specific LOINC codes

LOINC Code	Long Name
70949-3[72]	Pathology report.section heading
73983-9[73]	Report.section heading Unspecified body region

When these codes are used the display of OBX-3 should be suppressed and the Value component displayed as a heading. The value component is usually of type CE (Coded Entry) or ST (String). These LOINC codes are usually used in conjunction with the OBX-4 Observation SubID to allow repetition of the codes for multiple headings and nested sections.

Example of Section Heading:

72 http://s.details.loinc.org/LOINC/70949-3.html?sections=Simple
73 http://s.details.loinc.org/LOINC/73983-9.html?sections=Simple

```
OBX|2|CE|70949-3^^LN^CLUSTER^^EN 13606|1.1|70949-3^Clinical details^LN||||||F
```

4.6.3 Template Identifiers

When highly structured reports are used to report complex results such as Colorectal Cancer Histopathology the reports as based on a template. The template is identified by:

LOINC Code	Long Name
60572-5[74]	Report template ID

This OBX segment can be omitted from the display but for systems capable of interpreting the template provides an identifier for the template that the data confirms to. Any data in the list of OBX segments under the current OBR segment that has a OBX-4 Observation SubID starting with the SubID of the Template identifier OBX is a part of the templated data.

Example of Template Identifier:

```
OBX|1|RP|60572-5^^LN^ENTRY^^EN 13606|1|CEN.RCPA-ColorectalCancer.v3^Colorectal Cancer
Structured Pathology Report&99A-4DD10FEE7661CBF6&L^TEXT^Octet-stream||||||F
```

4.7 Digital Signatures

ORU messages can be digitally signed and receiving systems should be aware of this even if the digital signature is not evaluated. The specification for digital signing of ORU messages is detailed in the Standards Australia Technical Specification HB 308-2011 "Location of digital signatures in HL7 V2 Messages"

4.8 Display of Atomic Data

While there SHOULD be a display version of the atomic data contained in a message there are many situations where display of atomic data is desirable. OBX segments carry a single atomic piece of data and the display conventions are mostly dependent on the OBX Value Type which specifies the Data Type of the atomic data. The data is presented in a name=value format and can be rendered in a band like or tabular format. There are a number of factors that influence the display, some are general to every OBX segment and some depend on the data types. If an application displays the atomic data these considerations apply.

General considerations:

OBX-2 Value type (ID) Application SHOULD support display of all the allowable value types.

OBX-8 Abnormal flags should be taken into consideration and atomic results with abnormal flags SHOULD be highlighted. If colour is used, then highlighting must be achieved by an additional method not relying on colour to accommodate colour blind readers. The abnormal flags SHOULD be displayed and displayed immediately after any Numeric, Structured numeric, String or Coded data.

OBX-11 Observation result status (ID) will commonly be "F" for final, but could be for example "C" for corrected and this should be indicated to the user so they are aware that this result has a new value. HL7 table 0085 contains the possible values in this field and while some of them are unlikely to be displayed to a clinician, the display SHOULD provide an indication that the result is not the normal Final status.

OBX-14 Date/time of the observation (TS), if it is valued and different from the OBR value indicates that the clinically significant time (Date/time of collection for blood testing) differs from what is in the OBR and SHOULD be displayed with the value in the OBX to alert any clinician that this is the case

74 http://s.details.loinc.org/LOINC/60572-5.html?sections=Simple

Specific Considerations:

When the OBX value Type is Free Text (FT) the value of OBX-3 (Observation identifier) should not be displayed. This is not the case for OBX-3 values of ST which should have the value of OBX-3 displayed.

When OBX-3 contains a LOINC Comment code (Section 4.6) OBX-3 is not displayed. Commonly comments will be FT which also suppresses the display, but it should be suppressed for other value types as well.

The display of Free Text (FT) data SHOULD use a non proportional font to allow data of separate lines to align. This display SHOULD allow for a minimum of 80 characters before any word wrapping occurs. Free Text that is specified as able to be word wrapped should be word wrapped to make it visible to the user on one screen and not be hidden off the right hand side of the screen as one line of text.

When a RP datatype indicates and internet URL a mechanism should be provided for the user to open that URL if desired.

A mechanism SHOULD be provided for a clinician to view at least one of the available display formats if desired.

The identity of the original report Authors is provided by the OBR Filler order number which has a HD component as part of the EI datatype. This should be displayed as the authoring organisation. The result may have been forwarded by another organisation and the identity of the organisation that actually sent the result can be obtained from the MSH Sending Facility. While they are commonly the same it is not always the case.

For receiving systems, when one or more display segments are present in the OBR/OBX group, the system should default to show one of the available display segments, but may provide the user access to view the atomic information rendering.

4.9 Pathology terminology

Pathology terminology is published on the RCPA website[75] and the National Clinical Terminology Service[76].

4.10 Units of measure

The following is a summary of chapter 6 *Units of measure* from the RCPA's Standards for Pathology Informatics in Australia (SPIA)[77], for further detail refer to this document.

The preferred units of measure which are to be used in Australia are available by test on the RCPA website[78].

Common Australian Units of Measure with their UCUM representation and standard display form are available on the RCPA website see Preferred units[79] list.

4.10.1 Summarised background

The Standards for Pathology Informatics in Australia (SPIA) aims to reduce variability in the usage of units and increase patient safety; the following Guiding Principles, Implementation and Standards are extracted from the Standards for Pathology Informatics in Australia (SPIA)[80].

75 http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads
76 https://www.healthterminologies.gov.au/ncts/#/access
77 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx
78 http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads
79 https://www.rcpa.edu.au/getattachment/bdbfaf93-26a8-4d88-8c64-1b67bdf0e521/SPIA-Preferred-units.aspx
80 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx

Note: Implementers should check the current version of Standards for Pathology Informatics in Australia (SPIA) on the RCPA website[81].

4.10.2 Guiding principles

1. The standardisation of units used for reporting pathology in Australia is desirable and achievable.

2. All standardised pathology terminology and associated units should be available in one place.

3. A single, test-specific, standardised unit of measure is preferred for use in reports from pathology laboratories.

4. Units should be represented in electronic messages in such a way that receiving systems can readily convert units under the clinical governance of the receivers.

5. The Unified Code for Units of Measure (UCUM) is to be used as the logical representation of units of measure in electronic messages (to allow for principle 4).

6. Numeric results should always have the appropriate units associated with them and they should never be displayed without them.

4.10.3 Implementation

Refer to Standards for Pathology Informatics in Australia (SPIA)[82] section 6 units of measure:

- Units of measure should always be shown where a quantity is shown on pathology reports.
- The exception is where it is explicit that no units are used for a particular test such as Human chorionic gonadotropin qual.
- Pathology reports should use the units specified in the Standards for Pathology Informatics in Australia (SPIA)[83] for those tests where units have been determined.
- A single, standardised unit of measure should be used for tests in reports from pathology laboratories.
    - There may, however, be valid exceptions to this rule;
        - in a transition from one preferred unit to another
        - where alternate units are required by legislation or regulation such as for a registry
        - during a period of consensus building as to which will be the preferred unit, but this period should be as short as practical
        - where a facsimile of an historic report is produced – historic data need not comply.
- Units should be represented in electronic messages in fields for units in such a way that receiving systems can readily convert units under the clinical governance of the receivers. The Unified Code for Units of Measure (UCUM) must be used where it is the intention to represent units in a computable form (see http://unitsofmeasure.org/).
- Where the unit is not specified here, UCUM should be used for the unit. UCUM lexical elements such as square brackets (‘[’ and ‘]’) can be removed in the display format for enhanced clarity. However, the fully defined UCUM syntax should be used in electronic messaging.
- Superscripts and subscripts should not be used in units.

81 http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads
82 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx
83 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx

- The caret symbol (^) should be used to represent “raised to a power of”. Care must be taken to appropriately “escape” and "unescape" the caret symbol (^) as this symbol is used as a component separator in HL7 messages. Refer to examples in clause G6.08.
- Units raised to a power should be indicated in the preferred display unit by the exponent as an integer written immediately behind the unit term. For example, the preferred display unit for millilitre per minute per 1.73 square metre is mL/min/1.73m^2. Powers of ten should be represented by 10^ e.g. 10^12/.
    - Display example:
        - mL/min/1.73m^2
        - 6.1x10^12/L
    - Message example:
        - ml/min/1.73m\S\2
        - 6.1x10\S\12/L

4.11 SPIA Rendering of numeric results, ranges, units, previous results and flagging

The following is a summary of chapter 7 *Rendering of numeric results, ranges, units, previous results and flagging* from the RCPA's Standards for Pathology Informatics in Australia (SPIA)[84], for further detail refer to this document.

4.11.1 Summarised background

The PITUS project did an initial survey to identify common practices and the variation in reporting across Australia. A second survey looked at specific design issues related to cumulative reporting. This data in-conjunction with literature findings on the benefits of standardised representation of data i.e. aviation and other industries, as well as considering other national programs (including the National Medication Chart) made recommendations for reporting in Australia.

The following Guiding Principles, Implementation and Standards are extracted from the Standards for Pathology Informatics in Australia (SPIA)[85].

4.11.2 Guiding Principles

1. Missed or misunderstood test results as the consequence of poor rendering on paper or screen are as dangerous to patients as lost or wrong results.

2. The intention is not to stifle innovation in presentation through standardisation and so only those aspects of rendering where there is a concern around safety and broad support for standardisation were considered.

3. Numeric results are incomplete without associated units and guidance for interpretation (e.g. reference intervals) and so these must always be shown with the number.

4. Guidance values may be reference intervals, healthy limits or therapeutic ranges depending on the test.

5. Guidance values should be in the context (clinical history) of the subject of the report where this context is known and relevant.

84 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx
85 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx

6. Because errors are known to be made in reading and interpreting numbers and risk is reduced with consistency it is appropriate to standardise aspects of their presentation.

7. Further interpretation of results over time depends on knowing the latest results (and the direction of time) therefore when results are shown in columns, rows or graphically these must be consistent across disciplines and laboratories and the latest results must be differentiated from previous results.

8. Standards for the rendering of the pathology report must be practical and capable of implementation taking account of the different media and methods of display that are used.

9. Changes to configuration in the rendering of a report must be thoroughly tested in both printed and electronic format to ensure the report is displayed as intended by the receiver.

10.The rendering of the pathology report as the issuing laboratory intends it to be read must be sent by the laboratory in all electronic messages and be able to be displayed to the reader on screen or printed out.

11.Conveying meaning from one party to the other is dependent on appropriate testing of the different methods of display at both ends of the communication.

12.When reports are displayed on screen the latest results must be shown on the first display screen to avoid any chance of missing a latest result column or row that is off-screen.

13.Because around 4.5% of the population are colour blind and because some methods of communication remove colour, colour cannot be used as the only method for highlighting.

14. Multi-level flagging may be used

Implementation

An example of the application of the standards and guidelines for report rendering is shown for a columnar cumulative report in Figure 3 below.

				Latest Results		
Collection Date:	01-Jun-13	01-Jul-13	01-Aug-13	**11-Aug-13**		
Collection Time:	16:00	10:00	15:00	**09:00**		
Request No:	111111	222222	333333	**444444**	Reference	Units
Chemistry						
Sodium	**132 L**	**134 L**	**130 L**	**131 L**	(135–145)	mmol/L
Potassium	4.5	3.8	**5.6 H**	**7.1 H**	(3.5–5.2)	mmol/L
Chloride	**94 L**	98	**93 L**	95	(95–110)	mmol/L
Bicarbonate	**20 L**	**20 L**	26	**21 L**	(22–32)	mmol/L
Urea	6.8	6.5	7.0	7.3	(3.0-8.5)	mmol/L
Creatinine	74	69	87	73	(60–110)	umol/L
eGFR	66	71	54	67		mL/min/1.73m2
Calcium	2.19	2.28		2.29	(2.10–2.60)	mmol/L
Ca (alb cor)	2.13	2.26		2.27	(2.10–2.60)	mmol/L
Magnesium	0.75	0.74		0.79	(0.70–1.10)	mmol/L
Phosphate	1.31	0.96		1.29	(0.75–1.50)	mmol/L
Osmolality	283					mmol/kg

Figure 3 Cumulative report illustrating application of the rules for report rendering

- Numeric results must be right justified (when shown in columns) and have corresponding guidance values (e.g. reference interval) and units if these exist.

- Numeric results must have a leading zero where there is no number in the units place (i.e. 0.7 not . 7).
- For columnar cumulative reports the latest result must be shown in the furthest right column of results (i.e. time must go from left to right across the page) or at the top for cumulative reports shown in rows (i.e. time must go from the bottom to the top of the page).
- The latest result must be differentiated from earlier results by at least two methods one of which is a heading ‘Latest Results’.
    - A box such as that shown in Figure 3 was favoured by 75% of survey respondents for columnar reports.
    - Bolding of the heading text was considered effective by the Committee.
- Guidance values must be bounded by parentheses and have no spaces.
    - Italics should not be used.
- The column showing units must be headed ‘Units’, be left justified and be to the immediate right of the ‘Reference’ column.
- The numbers used for guidance must be rendered with the same number of decimal places as the related result.
    - For some analytes, such as tumour markers, a result may be orders of magnitude above guidance in which case current practice for some laboratories is to adjust for significant figures because of concern at overstating precision. It is not known whether it is safer to do this or to adopt the number of decimal places for the low range result. If a different number of decimal places is used at different concentrations, the guidance should be rendered to the same number of decimal places as the results of a similar magnitude to the guidance values.
- Results are considered outside the guidance values if after rounding to the format of the displayed result (and the guidance) the result is greater than the higher number or less than the lower number of the guidance values. S7.10 Results outside the guidance values must be highlighted by at least two methods one of which is either an ‘L’ or ‘H’ one space to the right of the result (‘L’ for a result lower and ‘H’ for a result higher).
    - A single asterisk (‘*’) and the ‘+’ and ‘-‘characters should not be used for flagging results
    - Underlining of results should not be used for highlighting results
    - Colour was preferred by most respondents in the survey but because of colour blindness and possible loss of colour in some communications, if colour is used, then the font should also be bolded.
    - Multi-level flagging may be used in which case ‘LL’ or ‘HH' should be used for the second level.
- Headings must be differentiated from test names.
- Dates must be shown in the form 30-Jan-14 (i.e. not in the form 30/01/14).

4.12 Harmonised reference intervals

The following is a summary of chapter 8 *Harmonised reference intervals* from the RCPA's Standards for Pathology Informatics in Australia (SPIA)[86] for further detail refer to this document.

A set of harmonised reference intervals for reporting pathology in Australia (and New Zealand) is available on the RCPA website[87]. These reference intervals are by age and sex where appropriate and include values used in paediatrics.

86 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx
87 http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads

4.12.1 Summarised background

Scientific evidence supports the use of common reference intervals for many general chemistry analytes, in particular those with sound calibration and trace ability in place. The harmonisation working group of the AACB[88] developed a number of common reference intervals for chemical pathology tests for routine use for adults and children in Australia.

The following Guiding Principles, Implementation and Standards are extracted from the Standards for Pathology Informatics in Australia (SPIA)[89].

4.12.2 Guiding principles

1. Guidance values should be evidence based but as simple and consistent as real biological variation and good medical practice allows.

2. Because common usage for analyte reference limits has both the low and high values included while for age limits the higher value is not included, to avoid any confusion in interpretation of boundary conditions these need to be represented in different ways in reports and tables used outside the laboratory.

3. There is as yet no international standard for representing age intervals and the committee proposes the format '1w to <12y' to show the time interval in a table or on a report. This was done to avoid confusion on reading and with the meaning of mathematical notation.

4. The same method for representing age intervals must be used for adults and children.

4.12.3 Implementation

The aim is to have the proposed intervals used as widely as possible within Australia (and New Zealand). The responsibility for use of the intervals lies with the Laboratory Director but the NATA 15189 field application document supports consideration of the use of common reference intervals such as those referenced here.

Laboratories should however ensure the intervals are appropriate for their methods and population by a combination of the following activities:

- Demonstrating that the methods in use can demonstrate low bias against international reference methods or material, or against the methods used in the Bias study;
- Validating by a CLSI-based protocol measuring 20 or more samples from healthy persons;
- Using data mining techniques to show minimal bias of the midpoint of their population as well as flagging rates (% high and low) similar to other laboratories.

Where reference intervals other than those provided here are used, laboratories should document their reasons and the evidence that alternate intervals are preferable

- Age intervals are calculated in days from date of birth to date of collection starting with day 0 being the day of birth with the result always rounded down.
- Age intervals must be rendered using days, weeks or years (but not months) in the form shown in the Table below. The Table also provides the interpretation of time ranges for common age intervals.
    - mixture of days, weeks and years is permissible where it is appropriate (e.g. '7d to <10y').

88 http://www.aacb.asn.au/
89 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx

Age	Interpretation of age (days)
0d to <1w	$0 \le d \le 6$
1w to <4w	$7 \le d \le 27$
1w to <26w	$7 \le d \le 181$
1w to <2y	$7 \le d \le 729$
1w to <18y	$7 \le d \le 6573$
4w to <26w	$28 \le d \le 181$
4w to <2y	$28 \le d \le 729$
26w to <1y	$182 \le d \le 364$
26w to <2y	$182 \le d \le 729$
1y to <4y	$365 \le d \le 1460$
2y to <6y	$730 \le d \le 2190$
2y to <10y	$730 \le d \le 3651$
2y to <18y	$730 \le d \le 6573$
4y to <15y	$1461 \le d \le 5477$
6y to <10y	$2191 \le d \le 3651$
6y to <12y	$2191 \le d \le 4382$
10y to <13y	$3652 \le d \le 4747$
10y to <14y	$3652 \le d \le 5112$
10y to <18y	$3652 \le d \le 6573$
12y to <15y	$4383 \le d \le 5477$
13y to <14y	$4748 \le d \le 5112$
14y to <15y	$5113 \le d \le 5477$
15y to <16y	$5478 \le d \le 5843$
15y to <17y	$5478 \le d \le 6208$
15y to <18y	$5478 \le d \le 6573$
15y to <19y	$5478 \le d \le 6938$
16y to <22y	$5844 \le d \le 8034$
17y to <19y	$6209 \le d \le 6938$
18y to <120y	$6574 \le d \le 43829$
19y to <22y	$6939 \le d \le 8034$
19y to <60y	$6939 \le d \le 21914$
20y to <120y	$7305 \le d \le 43829$
22y to <120y	$8035 \le d \le 43829$

4.13 Combining tests from different organisations

The RCPA Pathology Units and Terminology Standardisation (PUTS) project and the Pathology Information Units and Terminology Standardisation (PITUS) project made recommendations regarding the combining results cumulatively. The following rules rely upon the receiving system making a comparison of the incoming result in the HL7 message with the tests results being considered for the combination. The receiving systems must abide by these rules:

- If the LOINC codes are different then DO NOT COMBINE.;
- If the LOINC codes are the same and the units are different then DO NOT COMBINE;
- If the LOINC codes and Units are the same, follow the rules for Data combination indicator field as follows:
    - Green Can be combined with caution providing the receiving system is aware of the potential issues
    - Red DO NOT COMBINE
    - Orange DO NOT COMBINE (Orange = Under review or unknown)
    - <Blank> DO NOT COMBINE (Default)

Note: the green or orange or red combination indicator applies to the potential combination of results from different pathology providers. The colour indicator flag for a test is available on the RCPA website[90], for example there is a “Data combination Indicator” column in the RCPA - SPIA Chemical Pathology Terminology Reference Set[91].

Also refer to section 4 “Tests not to be combined in reports” in the Standards for Pathology Informatics in Australia (SPIA)[92].

Test results from the same pathology provider with the same LOINC or laboratory code may be used for combination/comparison irrespective of the data/colour combination indicator.

If transmitting in a HL7 message use OBX-17 "Observation method".

Examples:

|765921000168105^Do not combine laboratory test result^SCT|

|765931000168108^Combine laboratory test result with caution^SCT|

4.14 Pathology Specialisations

4.14.1 Histopathology

For histopathology reports that do not comply with the RCPA structured cancer protocol, the body of the report should be in an OBX segment using an FT data type. If a conclusion is included in the report it should be coded using a CE data type. However, if a suitable code is not available, then it is acceptable to transmit free text in the second component of the CE data type.

90 http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads
91 https://www.rcpa.edu.au/getattachment/00d5d4bd-7b05-465f-b6d5-8ffba1587459/SPIA-Chemical-Pathology-Terminology-Reference-Set.aspx
92 https://www.rcpa.edu.au/getattachment/b9250720-45df-4d0b-b998-f906e53e3bc9/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx

4.14.1.1 Structured cancer reporting

Significant work has been done by the RCPA in developing structured cancer protocols[93]. These protocols are shown in a HL7 V2.4 format:

Example - refer to Example: Structured reporting of colorectal cancer (see page 477).

Note:

1. Dot notation is used in OBX-4 *Observation sub-ID* to indicate a hierarchy of headings, data groups and data elements

More recently in the RCPA PITUS 15-16[94] working group 5 "*Report modelling for safe atomic reporting to registries*" have progressed FHIR[95] artefacts which are then transported in a HL7 V2.4 message. The initial work is based on the colorectal cancer protocol and the prostate (radical prostatectomy) cancer protocol and is available at http://fhir.hl7.org.au/fhir/rcpa/index.html.

4.14.2 Blood bank

In the OBX segments, the same LOINC code is used to indicate the item e.g. unit of blood or fresh frozen plasma etc, and OBX-4 *Observation sub-ID* is used to indicate the separate units of red cells or fresh frozen plasma etc.

Blood bank example

```
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY^L|Hospital Pathology^2112^AUSNATA|||20070620221113+1000||
ORU^R01^ORU_R01|51150420.834715|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||AL||AUS
PID|1|...
PV1|1|O||||||0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN|
0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN
ORC|RE||05-6690882-URC-0^Hospital Pathology^2112^AUSNATA||CM|||||||
0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN
OBR|1||05-6690882-URC-0^Hospital Pathology^2112^AUSNATA|XM^CROSS MATCH^NATA2112|||200706011300+1000|||||||
200706011928+1000||0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN||||DR=MME,LN=05-6690882,RC=Y||
200706011642+1000||MB|F||^^^200706010000+1000|0191322W^ANDERSON^THOMAS^^^DR^^^AUSHICPR^L^^^UPIN||||
Reporting Pathologist
OBX|1|ST|882-1^ABO+RH GROUP^LN||O Rh(D) Positive||||||F|||200706022316+1000
OBX|2|FT|888-8^ANTIBODIES IDENTIFIED^LN||Anti-K antibodies detected.\.br\\.br\ Anti-E antibodies detected.
\.br\\.br\||||||F|||200706022316+1000
OBX|3|ST|14577-1^ABO+RH GROUP^LN|1|2322112 A Rh(D) Positive||||||F|||200706022316+1000
OBX|4|ST|14577-1^ABO+RH GROUP^LN|2|2322112 A Rh(D) Positive||||||F|||200706022316+1000
OBX|5|ST|14577-1^ABO+RH GROUP^LN|3|2322112 A Rh(D) Positive||||||F|||200706022316+1000
OBX|6|FT|15412-0^Service Comment^LN||The following units(s) have been found to be \.br\compatible with this
 patient.||||||F|||200706022316+1000
```

4.14.3 Microbiology example

In Microbiology there may be multiple organisms isolated and each organism can have sensitivities specific to each isolate. This is reported under one OBR segment and the organism and its sensitivities are linked by using "1" for the Sub-ID fore first organism and "2" for the Sub-ID for the second organism etc. This links the relevant data together for machine processing even though the same OBX-3 (Observation Identifier) may be used multiple times. A microbiology example is below.

93 https://www.rcpa.edu.au/Library/Practising-Pathology/Structured-Pathology-Reporting-of-Cancer/Cancer-Protocols
94 https://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/PITUS-15-16
95 http://wiki.hl7.org/index.php?title=FHIR

Note: A new microbiology model is under development and the following example is to demonstrate the use of OBX sub-id, and is not intended as a definitive guide to micro urine reporting.

Microbiology reporting with multiple organisms example

```
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY^L|Acme Pathology^1001^AUSNATA|||20150420221113+1000||ORU^R01^ORU_R01|
20150420.123321|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||AL||AUS
PID|1|...
PV1|1|O||||||01234567W^BROWN^Bill^^^DR^^^AUSHICPR^L^^^UPIN|01234567W^BROWN^Bill^^^DR^^^AUSHICPR^L^^^UPIN
ORC|RE||03-7654321-URC-0^Acme Pathology^1001^AUSNATA||CM|||||||
01234567W^BROWN^Bill^^^DR^^^AUSHICPR^L^^^UPIN
OBR|1||03-7654321-URC-0^Acme Pathology^1001^AUSNATA|URC^URINE MICRO^L|||201503081300+1000|||||||
201503081928+1000||01234567W^BROWN^Bill^^^DR^^^AUSHICPR^L^^^UPIN||||DR=MME,LN=03-7654323,RC=Y||
201504181642+1000||MB|F||^^^201503080000+1000|01234564W^GREEN^Wilma^^^DR^^^AUSHICPR^L^^^UPIN||||Reporting
Pathologist
OBX|1|ST|19159-3^Collection Method^LN||Mid stream urine||||||F|||201503082316+1000
OBX|2|ST|25428-4^Glucose^LN||Negative||||||F|||201503082350+1000
OBX|3|ST|2514-8^Ketones^LN||Negative||||||F|||201503082350+1000
OBX|4|ST|20454-5^Protein^LN||+||||||F|||201503082350+1000
OBX|5|NM|30405-5^Leucocytes^LN||40|10*6/L^10*6/L^UCUM|<10|+|||F|||201503090015+1000
OBX|6|NM|30391-7^Erythrocytes^LN||20|10*6/L^10*6/L^UCUM|<10|+|||F|||201503090015+1000
OBX|7|SN|30383-4^Epithelial cells^LN||<^10|10*6/L^10*6/L^UCUM|||||F|||201503090015+1000
OBX|8|ST|8269-3^^LN|1|Organism 1||||||F
OBX|9|CE|630-4^Bacteria Identified^LN|1|40886007^Klebsiella oxytoca^SCT|||A|||F
OBX|10|SN|19090-0^Colony Count^LN|1|>^10|||A|||F
OBX|11|ST|18864-9^Amp/Amoxycillin^LN|1|R|||R|||F
OBX|12|ST|18862-3^Amoxycillin+Clavulanic acid^LN|1|R|||R|||F
OBX|13|ST|18897-9^Cephalexin^LN|1|R|||R|||F
OBX|14|ST|18955-5^Nitrofurantoin^LN|1|R|||R|||F
OBX|15|ST|18956-3^Norfloxacin^LN|1|S|||S|||F
OBX|16|ST|18997-7^Trimethoprim^LN|1|R|||R|||F
OBX|17|ST|18928-2^Gentamicin^LN|1|S|||S|||F
OBX|18|ST|8270-1^^LN|2|Organism 2||||||F
OBX|19|CE|630-4^Bacteria Identified^LN|2|73457008^Protues mirabilis^SCT|||A|||F
OBX|20|SN|19090-0^Colony Count^LN|2|>^100|||A|||F
OBX|21|ST|18864-9^Amp/Amoxycillin^LN|2|R|||R|||F
OBX|22|ST|18862-3^Amoxycillin+Clavulanic acid^LN|2|S|||S|||F
OBX|23|ST|18897-9^Cephalexin^LN|2|S|||S|||F
OBX|24|ST|18955-5^Nitrofurantoin^LN|2|S|||S|||F
OBX|25|ST|18956-3^Norfloxacin^LN|2|S|||S|||F
OBX|26|ST|18997-7^Trimethoprim^LN|2|R|||R|||F
OBX|27|ST|18928-2^Gentamicin^LN|2|S|||S|||F
OBX|28|FT|8251-1^Generated comment^LN||\.br\May be suggestive of UTI in the presence of symptoms.
\.br\||||||F
```

Note:

1. A display segment is expected, but has not been included in this example.
2. All results are reported under a single order (placer/filler) number.
3. An organism and its related sensitivities are reported within a group of OBX segments e.g. the value of "1" is common to all OBX-4 fields from OBX|8| to OBX|17| in the example above. If greater than one organism is present then the value of OBX-4 *Observation sub-ID* should be incremented for each organism.
    a. Comments associated with the organism/sensitivity pattern must have the same OBX-4 *Observation sub-ID* as the organism/sensitivity pattern.

   b. Comments associated with the report must have a different OBX-4 *Observation sub-ID* to the specific organism *OBX-4 Observation sub-ID.*
4. For the organism e.g. OBX|9| above, use a LOINC code in OBX-3.
5. For the identification of the organism a SNOMED CT code is used in OBX-5 *Observation value* e.g. OBX|9|-5 above of |40886007^Klebsiella oxytoca^SCT|.
6. If there is an abnormality indicator for the organism it will be in OBX-8 *Abnormal Flags* with the acceptable values of "A" for "Abnormal", "N" for "Normal" or "null".
7. If a colony count is present it will be in a separate OBX following the organism OBX e.g. OBX|10| above. It will have a LOINC code in OBX-3 e.g. 19090-0 for "Colony count [#/volume] in Urine" with the OBX-5 *Observation value* e.g. "|<10|".
8. When reporting sensitivities for the organism the encoded value for the antibiotic is in OBX-5 *Observation value* and the sensitivity result is placed in OBX-8 *Abnormal Flags* with the acceptable values being:
   a. S - sensitive;
   b. R - resistant; and
   c. I - intermediate
9. The LOINC code used for sensitivities identifies the method used for the sensitivities.
10. OBX-17 *Observation Method* is not used for microbiology susceptibility method.
    OBX-17 *Observation Method* is used for transmitting flags to indicate "combining of results" - refer to "Combining test values from different organisations (see page 258)".

4.15 Registry reporting

Notifiable conditions are under review by the PITUS working group and are one kind of registry reporting.

Notifiable diseases are to be reported to the respective state authority or notifiable diseases register.

4.16 Encoding URLs into RP datatype

URLs to external resources can be encoded into an RP datatype using the following method:-

The URL address is composed of *scheme* | *server* | *application path* | *data path* | *query* parts.

URL's are represented in the RP data type where the URL address is split into 2 parts:

1) the application part of the URL address: *scheme* | *server* | *application path*

2) the data pointer part of the URL address: *data path* | *query*

Component specification:
The <pointer (ST)> component identifies the particular data referenced in the application, which should be the *data path* and *query* parts of the URL.
The <application ID (HD)> component, <namespace id (IS)> sub-component must not be valued.
The <application ID (HD)> component, <universal id (ST)> sub-component must be the *scheme* | *server* and *application path* parts of the URL.
The <application ID (HD)> component, <universal id type (ID)> sub-component value must be "URI"
The <type of data (ID)> component must be valued.
The <subtype (ID)> component must be valued.

This specification can also be represented in a placeholder form as follows:

|<data path><query>^&<scheme><server><application path>&URI^<type of data (ID)>^<subtype (ID)>|

4.16.1 Histopathology

A histopathology image on a web server at:

https://labtest.com.au/mylabapp/data%20path/id/2016F0001000-1?view=jpegrender&mode=online

We will match the URL parts as follows:

URL Part	Value
scheme	https://
server	labtest.com.au
application path	/mylabapp
data path	/data%20path/id/2016F0001000-1
query	?view=jpegrender&mode=online

These parts would be encoded into a RP datatype as follows:

|/data%20path/id/2016F0001000-1?view=jpegrender\T\mode=online^&https://labtest.com.au/mylabapp&URI^image^jpeg|

NB. The '&' in the query part is encoded as "\T\". (This is because reserved characters in data should be escaped when written and de-escaped when read from HL7 messages.)

4.16.2 Radiology

Example 4.16.2:

A radiology report on a web server at:

https://images.rad.com.au/imageserver?Parameter1&Parameter2=Value2

URL Part	Value
scheme	https://
server	images.rad.com.au
application path	/imageserver
data path	
query	?Parameter1&Parameter2=Value2

This then would be encoded into an OBX as follows:

OBX|2|RP|55113-5^Radiology Images^LN||?Parameter1\T\Parameter2=Value2^&https://images.rad.com.au/imageserver&URI^text^html

4.17 Reconciling pathology orders and observation messages

4.17.1 Introduction

There is not always a direct reconciliation between an order and the observation in the report. This may be due to many scenario's including:

- The request test may have multiple components that are reported.
- Multiple requested tests may be reconciled with the completion of an individual test or different group of tests.
- The requested test may be superseded by a better test.
- Reflex or self determined types tests added by the pathology provider
- Different coding systems are used for requesting and reporting

Hence, the use of the correlation between the placer order number and the requested test provides the most suitable way of determining if an order has been completed. This process does not rely on matching order codes with result codes which are quite often different.

Order to report scenario	**ORC-1 Order control code** **(HL7 table 0119)**	**Order control code description**	**Comment**
Direct 1:1 matching of order with the report	RE	Observations /Performed Service to follow	Note: This is a variance to HL7 V2.4, section 4.5.1.1.1(j) which states that this codes is not necessary in an ORU message. However, HL7 provides no option to filling this mandatory field.
Greater than one ordered test on a single report - Results with no direct order	CN	Combined result	
Greater than one ordered test on a single report - Final test sent in report	RE	Observations /Performed Service to follow	
Reflex or self determined tests or where a single test generates greater than one report - result for the original order	PA	Parent order/ service	Medicare Australia permits the laboratory automatically adding on tests based on initial results, though these add-ons are more likely to be non-billable. These add-on tests will not have a *Placer Order Number*; however they can be matched using the *Placer Group Number*.

Order to report scenario	ORC-1 Order control code (HL7 table 0119)	Order control code description	Comment
Reflex or self determined tests or where a single test generates greater than one report - child orders	PA/CH	Parent order/ service / Child order/ service	
Reflex or self determined tests or where a single test generates greater than one report - final test sent with the report	RE	Observations /Performed Service to follow	
Report copies to recipients that are not the original requester	RE	Observations /Performed Service to follow	Placer group number and placer order number shall be <null>.
Add-on tests - requested by someone who is not the original requester	RE	Observations /Performed Service to follow	The placer group number should be sent as for the original request. For the ordering provider, placer order number will be returned. However, for the original requester, the placer order number shall be <null> i.e. although the original requester did not order the test they would generally be included in the copy to doctors.
An order may be cancelled by the placer up until the time the result is sent or by the filler due to an unsatisfactory specimen. Once a test is resulted it cannot be cancelled.	CA	Cancel order/ service request	Placer Applications. A cancellation is a request by the placer for the filler not to do a previously ordered service. Confirmation of the cancellation request is provided by the filler, e.g., a message with an ORC-1-order control value of CR. Typical responses include, but are not limited to, CR – Cancelled as requested, UC – Unable to Cancel.

4.17.2 Reconciling Results

Generally the placer systems may expect that result test codes match the ordered test codes; however when this does not occur the following process is followed to align tests ordered and results received.

1. Filler systems are to transmit results as they have historically reported them;
2. Placer systems are to receive result test codes for matching to the ordered test code; and
3. Placer systems are to accept additional test codes as a consequence of:
    a. rationalised order/result reporting by the filler;

b. added tests as determined by the filler; or
c. report copies requested by another doctor.

The general rules for reconciling tests ordered and resulted are:

1. When ordered tests codes match the result test codes then the results are returned as expected.
2. When the ordered test codes do not match the result test codes, the ordered test codes are returned as completed, but with no associated results, then followed immediately by the corresponding result test with the associated results.
3. Add-on tests can only be returned as an extra result test code.

Basic method - if there is an OBR segment with no associated OBX segments then the order is marked off as complete and results are looked for in the first immediately following OBR/OBX segment set.

This methodology is demonstrated in the following examples:

An order is sent to the pathology laboratory for these tests:

- Haemoglobin (Hb) and white cell count (WCC)
- Urea and Electrolytes (UE)
- Magnesium

With the following order message:

Example Order message

```
MSH|...|ORM^O01^ORM_O01
PID|
ORC|NW|P41234^98765432^DRS^L||PG4567^98765432^MDW^L
OBR|1|P41234^98765432^DRS^L||271026005^Hemoglobin level estimation^SCT|....
ORC|NW|P41235||PG4567|
OBR|2|P41235||767002^White blood cell count^SCT|
ORC|NW|P41236||PG4567|
OBR|3|P41236||444164000^Urea, electrolytes and creatinine measurement^SCT|
ORC|NW|P41237||PG4567|
OBR|4|P41237||63571001^Magnesium measurement, serum^SCT|
```

The pathology provider will respond with the following ORR^O02 message - ignoring the two-stage acknowledgement for this scenario:

Example ORR^O02 message

```
MSH|...|ORR^O02^ORR_O02
MSA|AA|
PID|
ORC|OK|P41234|F98765|PG54321|
OBR|1|P41234|F98765|271026005^Hemoglobin level estimation^SCT|
ORC|OK|P41235|F98766|PG54321|
OBR|2|P41235|F98766|767002^White blood cell count^SCT|
ORC|OK|P41236|F98767|PG54321|
OBR|3|P41236|F98767|444164000^Urea, electrolytes and creatinine measurement^SCT|
ORC|OK|P41237|F98768|PG54321|
OBR|4|P41237|F98768|63571001^Magnesium measurement, serum^SCT|
```

The Pathology provider receives and evaluates the order and processes the request as follows:

1) A Full Blood Count (FBC) is used to replace the HB and WCC

2) A Urea, Electrolytes and Glucose (UEG) is done instead of a UE to provide more information to the requester with minimal additional cost to the pathology provider.

3) A magnesium (MG) test is done for the MG serum test i.e. the request ordered is the test being performed.

4) A moderately elevated glucose is identified, so the laboratory adds an additional haemoglobin A1c (HbA1c).

The laboratory will report the results depending on the processing within the organisation, so there could be some variation in the order. It is normal for each result to be reported within its own message.

The following is the format used when the results are being reported for the first time. If there is a correction to a result and the test is re-reported then it is not necessary for the (ORC/OBR) message set to contain the initial OBR segments from the examples below which indicate that the ordered tests are complete. That is, it is optional to leave them out. For further information on corrected results refer to section OBR-25 Result status (ID) above.

The (OBR/OBX) segment set containing the atomic results is for a procedure substituted by the filler that replaces one or more procedures ordered by the placer. Therefore, no Placer Order Number is available, because the placer has no knowledge of this order prior to this transaction. The placer would post this as an unsolicited result.

Scenario 1:

When the test code for the result being reported is different to the test being requested then the OBR segment for the actual result is preceded by the OBR segments showing which orders are being replaced by this result.

In this case there are 2 requested tests (Hb and WCC) that have been combined and reported with a different test (FBC) code.

NOTES:
1 The ORC segment does not contain the Placer Order Number as two orders are being reported within a single ORC segment. The immediately following OBR segments return the Placer Order Number and the test/procedure code for tests/procedures that have been ordered by the placer but will be reported by the filler as part of another procedure. The OBR-25 Result Status of F indicates that this order is complete and that the placer can mark the order accordingly.
2 It is imperative that you mark the orders indicated by these OBR segments as complete as this is the only indication that you will receive with regard to these Placer Order Numbers. The group of orders indicated by the Placer Group Number in the ORC segment may not yet be complete so the ORC-5 Order Status will not necessarily contain 'CM'.
3 The immediately following set of OBR and OBX segments contain the atomic results for the tests/procedures directly ordered by the placer. Correspondingly there is no Placer Order Number in the OBR segment, as the test/procedure was not ordered—it is a replacement for the tests/procedures in the two immediately preceding OBR segments. The OBR-25 Result Status has a value of 'F' to indicate that the result is complete.
4 In this case the Filler Order Number for 'OBR|3|..' contains the laboratory number.

Example Filler Order Number for OBR

```
MSH|...|ORU^R01^ORU_R01
PID|
PV1|
ORC|RE|||PG54321|
ORC|RE|P41234^98765432^DRS^L|01-8615014-CBC-0^NATA^2184^N|PG54321^98765432^DRS^L|CM
OBR|1|P41234^98765432^DRS^L|01-8615014-CBC-0^NATA^2184^N|271026005^Hemoglobin level
estimation^SCT||||||||||||||||||||F (Placer order is complete)
ORC|RE|P41234^98765432^DRS^L|01-8615014-CBC-0^NATA^2184^N|PG54321^98765432^DRS^L|CM
OBR|2|P41234^98765432^DRS^L|01-8615014-CBC-0^NATA^2184^N|767002^White blood cell
count^SCT||||||||||||||||||||F|(Placer order is complete)
OBR|3||01-8615014-CBC-0^NATA^2184^N|26604007^Full blood count^SCT||..|F| (Replacement test of results)
OBX|1|ST|15430-2^^LN||FULL BLOOD EXAMINATION||||||F
```

```
OBX|2|NM|718-7^Haemoglobin^LN||131|g/L^^ISO+|135-180|-|||F
OBX|3|NM|789-8^Red Cell Count^LN||4.2|x10*12/L^^ISO+|4.2-6.0||||F
OBX|4|NM|4544-3^Haematocrit^LN||0.38||0.38-0.52||||F
OBX|5|NM|787-2^Mean Cell Volume^LN||91|fL^^ISO+|80-98||||F
OBX|6|NM|785-6^Mean Cell Haemoglobin^LN||31|pg^^ISO+|27-35||||F
OBX|7|NM|777-3^Platelet Count^LN||249|x10*9/L^^ISO+|150-450||||F
OBX|8|NM|6690-2^White Cell Count^LN||15.0|x10*9/L^^ISO+|4.0-11.0|++|||F
OBX|9|NM|770-8^Neutrophils^LN||88|%|||||F
OBX|10|NM|751-8^Neutrophils^LN||13.2|x10*9/L^^ISO+|2.0-7.5|++|||F
OBX|11|NM|736-9^Lymphocytes^LN||4|%|||||F
OBX|12|NM|731-0^Lymphocytes^LN||0.6|x10*9/L^^ISO+|1.1-4.0|-|||F
OBX|13|NM|5905-5^Monocytes^LN||6|%|||||F
OBX|14|NM|742-7^Monocytes^LN||0.9|x10*9/L^^ISO+|0.2-1.0||||F
OBX|15|NM|713-8^Eosinophils^LN||2|%|||||F
OBX|16|NM|711-2^Eosinophils^LN||0.30|x10*9/L^^ISO+|0.04-0.40||||F
OBX|17|NM|706-2^Basophils^LN||0|%|||||F
OBX|18|NM|704-7^Basophils^LN||0.00|x10*9/L^^ISO+|< 0.21||||F
OBX|19|FT|5909-7^Interpretation^LN||Red cells are normochromic
```

and…..

This completes the haematology results and reporting.

Scenario 2:

This example illustrates a where a different test code is substituted for the requested test. This is similar to the first scenario except that in this scenario there is a one to one replacement of test codes.

The UE requested is replaced by a more informative UEG by the pathology provider as part of the laboratory policy to value add where they can with minimal cost implications.

Example where a different test code is substituted for the requested test

```
MSH|...|ORU^R01^ORU_R01
PID|
PV1|
ORC|RE|||PG54321|
OBR|1|P41234|F98765|||||||||||||||||||||F (Placer order is complete)
OBR|2||01-8614957-UEG-0^NATA^2184^N|UEG^ELECTROLYTES UREA GLUCOSE^2184|||...|F (substitute for the ordered
test)
OBX|1|ST|15428-6^^LN||SERUM CHEMISTRY||||||F
OBX|2|NM|2951-2^Sodium^LN||128|mmol/L^^UCUM|137-147||---|||F
OBX|3|NM|2823-3^Serum Potassium^LN||4.2|mmol/L^^UCUM|3.5-5.0||||F
OBX|4|NM|2075-0^Chloride^LN||97|mmol/L^^UCUM|96-109||||F
OBX|5|NM|1963-8^Bicarbonate^LN||19|mmol/L^^UCUM|25-33|---|||F
OBX|6|NM|1863-0^Anion gap^LN||16|mmol/L^^UCUM|4-17||||F
OBX|7|NM|14749-6^Glucose random^LN||9.0|mmol/L^^UCUM|3.0-5.4||||F
```

NOTE: The ORC segment does not contain the Placer Order Number as the test/procedure code being reported was not ordered. The immediately following OBR segment returns the Placer Order Number and the test/procedure code for the replacement test/procedure. This process is similar to scenario 1.

Scenario 3:

In this scenario the test resulted is the same the test ordered; hence there no combining or replacing of test codes as per scenario 1 and 2.

The ORC fields are populated and there is only a single OBR segment.

Example OBR segment

```
MSH|...|ORU^R01^ORU_R01
PID|
PV1|
ORC|RE|P41237|F98768|PG54321|CM
OBR|1|P41237|01-8614957-MG-0^NATA^2184^N|63571001^Magnesium measurement, serum^SCT
OBX|1|NM|2601-3^Magnesium^LN||0.95|mmol/L^^UCUM|0.70-1.10||||F
```

Scenario 4:

A test that has not been requested is added by the pathology provider and hence no order exists in the placer system. This test must be added as an unsolicited test using the Placer Group Number.

Example Placer Group Number

```
MSH|...|ORU^R01^ORU_R01
PID|
PV1|
ORC|RE|||PG54321|
OBR|1||01-8614957-A1C-0^NATA^2184^N|43396009^Hemoglobin A1c measurement^SCT|
OBX|1|NM|4548-4^HbA1c^LN||8.0|%^^UCUM|<7.0||||F
```

NOTE: A similar situation exists where the placer system receives results as a consequence of being nominated as a copy doctor by another site. However, in this case, the Placer Group Number is not relevant either and procedures must be in place to manage it.

Scenario 5 -an unavailable result:

A result may be unavailable due to a number of factors including:

- insufficient specimen - where specimen was collected the patient or the requester or circumstances prevent the laboratory from recollecting.
- sample degraded in collection or processing including transport to the laboratory

In this case the OBX segment for the unavailable result may be suppressed or it can be reported as follows.

In either case a comment will be attached to indicate the situation. For this reason the result item has to be returned because the comment is attached to that item.
OBX-2 value type is null

OBX-11 Result status is 'X'. Refer HL7 V2.4, Section 7.4.2.2. Using HL7 Table 0085 - Observation result status codes interpretation (see page 244)

Example: Potassium result is not available.

```
OBR|2||01-8614957-UEG-0^NATA^2184^N|UEG^ELECTROLYTES UREA GLUCOSE^2184|||...|F (substitute for the ordered
test)
OBX|1|ST|15428-6^^LN||SERUM CHEMISTRY||||||F
OBX|2|NM|2951-2^Sodium^LN||128|mmol/L^^UCUM|137-147||---|||F
OBX|3||2823-3^Serum Potassium^LN|||mmol/L^^UCUM|3.5-5.0||||X    (Note: no value for value type i.e. OBX-2
 and Result status (OBX-11) value is "X")
OBX|4|...
OBX|3|FT|15412-0^Service Comment 21^LN||\.nf\Specimen haemolysed and unable to be recollected||||||F|
```

Alternatively, a value of |""| (no result and update field in database) as opposed to 'null' (no result and do not update data base field) may be used. If the |""| format is used then OBX- 11 will not contain 'X' as OBX-2 is valued.

OBX|3|NM|2823-3^Serum Potassium^LN||""|mmol/L^^UCUM|3.5-5.0||||F

4.18 Matching Patient Identifiers

A pathology provider will want to match the patient identifier to enable the provision of cumulative results which provides more information over time than just a snapshot and Medicare has rules on some tests regarding the frequency a test can be ordered over a period of a specific period of time. The pathology results receiver will want the patient identifier to match results on a patient where the order originated from another provider e.g. copy to doctor, to determine if it is an existing patient or a new patient to their patient management system. It is therefore useful to the receivers of the request or the results to receive as many patient identifiers as possible.

The PID-3 field *Patient Identifier List* is to be used for patient identifiers and the field PID-18 *Patient Account Number* is to be used when the patient account details are needed. PID-18 is a CX datatype (see page 151) and the type code is not required due to the uniquely titled field.

Other PID fields such as PID-2 *External Identifier*, PID-4 *Alternate Identifiers*, PID-19 *SSN Number* and PID-27 *Veteran's Military Status* are no longer used in the Australian context and PID-3 should be used instead. PID-3 is also a CX datatype (see page 151) - refer to examples in Table 6-1. Examples (see page 311).

4.19 Reporting corrected results

Flagging of results is accommodated at both the individual observation level and the report level. Comments generally apply to the report and the placer systems act on the basis of the report. Normally only final results flagged with an "F" are transmitted and are indicated in OBR-25 *Result Status* - refer to HL7 table 0123 *Result status* for valid values.

A corrected result (an amendment of a previous final result) will be flagged in OBR-25 with a "C" as will the relevant OBX-11 segment be flagged with a "C". The unchanged OBX segments of the results will contain the normal "F" flag. All OBX segments are to be re-transmitted, not just the corrected ones and the OBR segment should be marked as Corrected when any OBX segments are corrected.

Note: A corrected report may not necessarily have an associated corrected OBX segment as an additional result or comment may have been added by a scientist/pathologist and this additional result will be flagged with a "C".

For a pathology example, the Potassium result has been corrected below:

```
OBR|2||01-8614957-UE-0^NATA^2184^N|444164000^ Urea, electrolytes and creatinine measurement^SCT|||...|C
OBX|1|ST|15428-6^^LN||SERUM CHEMISTRY||||||F
OBX|2|NM|2951-2^Sodium^LN||128|mmol/L^^UCUM|137-147||---|||F
OBX|3|NM|2823-3^Serum Potassium^LN||4.0|mmol/L^^UCUM|3.5-5.0||||C
OBX|4|NM|2075-0^Chloride^LN||97|mmol/L^^UCUM|96-109||||F
OBX|5|NM|1963-8^Bicarbonate^LN||19|mmol/L^^UCUM|25-33|---|||F
OBX|6|NM|1863-0^Anion gap^LN||16|mmol/L^^UCUM|4-17||||F
```

When results are corrected and sent, and then further corrections are made and sent in a second transmission, only the results that were corrected for the second transmission are flagged as being corrected. That is, the originally corrected items are not flagged a second time.

Example:
If in the above pathology example, the Bicarbonate is corrected after the Potassium correction is sent, then in the second transmission only the Bicarbonate is marked as Corrected.

```
OBR|2||01-8614957-UE-0^NATA^2184^N|444164000^ Urea, electrolytes and creatinine measurement^SCT|||...|C
```

```
OBX|1|ST|15428-6^^LN||SERUM CHEMISTRY||||||F
OBX|2|NM|2951-2^Sodium^LN||128|mmol/L^^UCUM|137-147||---|||F
OBX|3|NM|2823-3^Serum Potassium^LN||4.0|mmol/L^^UCUM|3.5-5.0||||F
OBX|4|NM|2075-0^Chloride^LN||97|mmol/L^^UCUM|96-109||||F
OBX|5|NM|1963-8^Bicarbonate^LN||20|mmol/L^^UCUM|25-33|---|||C
OBX|6|NM|1863-0^Anion gap^LN||16|mmol/L^^UCUM|4-17||||F
```

4.20 Linking results to comments

Comments can be associated with results and more generally with the report. To indicate which is being referenced the following protocol is used:

Result comments	Use LOINC Codes	Specified in which field	Comment
Result comments associated with individual results	15412-0 to 15431-0 i.e. 15413-8, 15414-6, 15415-3, 15416-1, 15417-9, 15418-7, 15419-5, 15420-3, 15421-1, 15422-9, 15423-7, 15424-5, 15425-2, 15426-0, 15427-8, 15428-6, 15429-4, 15430-2, 15431-0.	OBX-3	The actual comment should be placed in OBX-5 and have the same OBX-4 value. To facilitate backwards compatibility the OBX with the comment should immediately follow the OBX with the result.

Result comments	Use LOINC Codes	Specified in which field	Comment
Report comments associated with the entire report	8251-1 to 8270-1 i.e. 8262-8, 8264-4, 8265-1, 8266-9, 8267-7, 8268-5, 8269-3, 8270-1, 8252-9, 8253-7, 8254-5, 8255-2, 8256-0, 8257-8, 8258-6, 8259-4, 8260-2, 8261-0, 8263-6.	OBX-3	The report comments shall be in the OBX segment immediately before the OBX display segment(s).

4.21 Processing FT value types in OBX segments

Both sending and receiving sites need to take care when a value type FT in an OBX segment is transmitted.

In the following example, it would indicate that the OBX-3 *Observation Identifier* should be discarded and only OBX-5 *Observation value* formatted and displayed as per embedded formatting content.

OBX|10|FT|8251-1^SERVICE COMMENT 01^LN||POTENTIAL DIGOXIN TOXICITY.\.br\ Nausea, vomiting, diarrhoea and blurred vision may be noted at this level.\.br\||||||F

If pathology providers require OBX-3 *Observation Identifier* to be displayed then the value type (OBX-2) should be ST and not FT. In the example above, if ST is used any embedded FT formatting, including line breaks, will not be available. Alternatively the heading text can be included with the FT value.

Pathology providers should ensure that any short result lines (e.g. < 50 characters) of the ST datatype should not contain embedded formatting controls.

4.22 Using OBR user defined fields in the Australian context

The HL7 V2.4 data model does not accommodate all the possible use cases required and hence OBR-18 *Placer field 1*, OBR-19 *Placer field 2*, OBR-20 *Filler field 1* and OBR-21 *Filler field 2* have been provided for free use for placers and fillers. These fields enable specific processing that is not handled elsewhere in the HL7 V2.4 standard. Each of these fields are two components i.e. "code=value", where the code defines the element and the second item value is the relevant value for that code. Within the field the repeating sets are separated by a comma (',') but this is not a HL7 repeat, but is encoded within the text.

|code=value,code=value,code=value,…….|

In the Australian context the following elements are defined for OBR-20.

Code	Definition	Additional comments and examples
AUSEHR	My Health Record consent flag.	For example AUSEHR=Y indicates that consent has been given for this report to be uploaded to the My Health Record.
CP	This is a copy result i.e. the receiving doctor is not the requesting doctor.	Useful to the receiving site when a result is received with no corresponding order or the patient has no history at the medical practice. This item is not required when the receiving doctor is the requesting doctor. Example: |CP=Y| for the case when it is a copy doctor.
DR	The doctor code or Provider Number used by the diagnostics provider for the Receiving Doctor.	The code can be used by the diagnostics provider to write a 'tracking' record for the result after the surgery has acknowledged receipt of the result. It is not required to be returned by the surgery; the diagnostics provider will retrieve the code from their copy of the message when the acknowledgment is received. Alternatively, the receiving site can use the code to identify the receiving doctor. It should be assumed to be a Provider Number, although in some instances the provider number will not be available when the receiver is not a Medicare registered practitioner. Example: DR=ABC12 — doctor code DR=123456XY — provider number
LN	Laboratory/Diagnostic imaging Number assigned by the diagnostics provider to the specimen or procedure.	For electronic orders the Filler Order Number is used to acknowledge receipt of the order. This may not necessarily correspond to the diagnostics provider's identifier for the result. This value must be retained and displayed by the PMS because referral to the performing diagnostics provider will usually require this number to be quoted (NOT the Filler Order Number). In cases where no electronic order was made, and consequently no Filler Order Number was returned in an Order Acknowledgment (ORR message), the result message may contain the Laboratory/Diagnostic imaging Number in the 'Filler Order Number' field. For consistency it should be recorded under the 'LN' item.
RC	Request complete	HL7 only allows an individual 'order' items to be flagged complete—not a list of orders that formed a request. Tests that are ordered may be reported under a different test name and this can be marked complete by sending an OBR with no OBX segments. This facility allows for all orders under a placer group number to be flagged complete. In the case where electronic orders are not implemented, this provides a mechanism to indicate the when all results for the request have been reported. This is indicated via the 'RC=Y' item. Example: RC=Y

4.23 Tracking Result Identifiers

Although a laboratory will often track a request internally using their lab number, the lab number is not allocated until the specimen has been collected and is therefore only useful as a component of the *Filler Order Number*. While the lab number will be the same for all specimens received together, each individual battery will have a unique Filler Order Number. This is often achieved by appending text to the lab number, but practices may vary.

When an electronic request is made the order will be transmitted to the laboratory, the laboratory must respond with with a *Filler Order Number*: If the order contains more than one order on the same request i.e. same Placer Group Number then the laboratory must respond with the same number of order responses.
The preferred response is to respond immediately to the order with an ACK message and transmit an ORR message with a Filler Order Number when the specimen is received.
An optional method is for the laboratory to hold the order and not respond until the specimen has been received by the laboratory and the lab number can be used as one part of the *Filler Order Number.*

The order becomes activated when the laboratory number is is entered enabling the order response message to be sent to the placer using the laboratory number as part of the *Filler Order Number,* e.g. 'LAB-9876543-LFT', 'LAB-9876543-UEG' where the test suffix differentiates the orders on the same request. When several identical tests are done under the same lab number a specimen number is often appended to ensure each result has a unique fille order number.

Results returned to the placer of the electronic order will contain the Placer Order Number where relevant and both the *Placer Group Number* and the *Filler Order Number* to link results to the order along with the laboratory number enabling the placer (surgery/GP) to follow up with any queries to the laboratory. For results transmitted to the non-requesting provider e.g. a copy to Dr, the *Placer Group Number* is included, but not the *Placer Order Number* or the *Filler Order Number*.

4.24 Messaging negative numbers

It is important to be able to represent negative numbers in messages as the "-" character is the same used for both negative numbers and a hyphen separator e.g. in reference ranges. Negative numbers must not have a space between the sign and the number.

Parsing on a "-" character can be dangerous as there could be confusion with the negative number and the hyphen between the two reference range values.

A negative reference range is presented as:

OBX|7|NM|1555-0^Base Excess in blood by calculation^LN||7.6|mmol/L|-7.0 - -1.0|H|||F|||20110531101400

Note: no space between hyphen and number for a negative number and a space either side of the hyphen for the character between the reference range values.

4.25 Delete messages for reports and results

The reasons for deleting a report and results include:

- when a patient merge is required where a delete message is sent for each report then the new results are sent with the correct UR number.
- When a report is attached to the wrong patient.

In either case the process is the similar.

To delete a report:

ORC-5 Set to "CA" Cancel
OBR-25 Set to "X"

OBX-11 Set to 'D' or 'W' depending on the reason for the delete message.
D - delete a single result e.g. clotted tube—no platelet count.
W - wrong results sent e.g. results on wrong patient

Example:

```
MSH|...
PID|...
PV1|....
ORC|RE||11P123456-98765432^MLS^2623^AUSNATA|996042222^SNP^1964^AUSNATA|CA||||20160623164200|JAMB^James
Brown^^^^^^^NATA2623||049266KX^Teste^Testy^^^Mr^^^AUSHIC|||20160810171724
OBR|1||11P123456-98765432^MLS^2623^AUSNATA|ALL^ALL^NATA2623||20110623164200|20160623164200|||||""|Nil -
Testing Hl7|||049266KX^Teste^Testy||MPATH|KEST|IMAGE|12552953|||CH|X
OBX|1|ST|ALL^ALL^L|1|Delete all results for this report||||||D
```

4.26 Non-Displayable Supporting data

Encapsulated data attachments are non-displayable files that are ancillary to the main report. They are not e.g. images that form part of the report, related documents, or data which could be used in a display segment. An example of an attachment would be raw XML data from an instrument. Documents which are related to the current report (defined by the OBR) and are displayable using one of the supported AUSPDI display segment datatypes should appear under their own OBR. Attachments can also be represented inline (meaning under the same OBR) or under their own OBR which has the advantage of having a unique document identifier for citation purposes (OBR-3 Filler Order Number), a representation of relevant dates and authorship to be associated with the attachment. Where an attachment is used some narriative documenting the attachment should appear in the display segment associated with the OBR under which the attachment appears.

There can be no expectation that the receiver will be able to process the attachment except by mutual agreement.

Attachments must be represented with ED datatypes in OBX, and must use Base64 encoding.

The sending application must select the appropriate MIME type and sub-type for the attached document and convey that in the corresponding ED value components <type of data (ID)> and <data subtype (ID)>. See 3.10 ED - encapsulated data (see page 153).

Note: Any OBX with Encapsulated Data (ED) which is identified as a Display Segment by "AUSPDI" as per the section on Display Segments (see page 247) should not be represented as an inline attachment.
Some examples of MIME Types and subtypes could be:

MIME Type	Mime	
application	x-hl7-cda-xdm-zip	HL7 CDA when packaged in XDM ZIP format
application	fhir+xml; fhirVersion=*[version]*	Atomic HL7 FHIR resource content in XML format *
application	fhir+json; fhirVersion=*[version]*	Atomic HL7 FHIR resource content in JSON format *
text	csv	Comma separated file format
application	vnd.ms-powerpoint	Powerpoint presentation
application	vnd.openxmlformats-officedocument.presentationml.presentation	Powerpoint presentation

MIME Type	Mime	
application	vnd.openxmlformats-officedocument.wordprocessingml.document	Microsoft Word .docx file
application	vnd.ms-excel	Excel spreadsheet xls

*Refer to the FHIR specification for appropriate values of the *version* variable. e.g. "4.0" https://www.hl7.org/fhir/versioning.html

Encapsulated data (attachments)

```
ORC|RE||2.25.263498878813690208021966154988434320272^Good Hospital^1.2.36.1.2001.1003.
0.8003629900024197^ISO||CM|||||||0191324T^MCINTYRE^ANDREW^^^^^^AUSHICPR^L^^^UPIN
OBR|1||2.25.263498878813690208021966154988434320272^Good Hospital^1.2.36.1.2001.1003.
0.8003629900024197^ISO|18842-5^Discharge Summarization Note^LN|||20140825103830|||||||||
2671351T^Doctor^Good^^^Dr^^^AUSHICPR||||||20140825103830||PHY|F||^^^20140825103830
OBX|1|ED|18842-5^Discharge Summarization Note^LN||^application^x-hl7-cda-xdm-zip^base64^UEsDBBQ
OBX|2|ED|HTML^Display format in HTML^AUSPDI||^text^html^Base64^PD94bWwgdmVyc2lvbj0iMS4wIj8+Cjwh....
OBX|3|ED|PDF^Display in PDF Format^AUSPDI||^application^pdf^Base64^JVBERi0xLjQNCiXi48/TDQolDQol...ORC|RE||
12123-1^Good Hospital^1.2.36.1.2001.1003.0.8003629900024197^ISO||CM|||||||
0191324T^MCINTYRE^ANDREW^^^^^^AUSHICPR^L^^^UPIN

ORC|RE||12123-2^Good Hospital^1.2.36.1.2001.1003.0.8003629900024197^ISO||CM|||||||
0191324T^MCINTYRE^ANDREW^^^^^^AUSHICPR^L^^^UPIN
OBR|3||12123-2^Good Hospital^1.2.36.1.2001.1003.0.8003629900024197^ISO|52033-8^General correspondence^LN
Note^LN|||20140825103830|||||||||2671351T^Doctor^Good^^^Dr^^^AUSHICPR||||||20140825103830||PHY|F||
^^^20140825103830
OBX|1|ED|52033-8^General correspondence^LN|2|^application^octet-stream^Base64^...||||||F
OBX|2|ED|PDF^Display format in PDF^AUSPDI||^application^pdf^Base64^...||||||F|||20170322

ORC|RE||12123-3^Good Hospital^1.2.36.1.2001.1003.0.8003629900024197^ISO||CM|||||||
0191324T^MCINTYRE^ANDREW^^^^^^AUSHICPR^L^^^UPIN
OBR|4||12123-3^Good Hospital^1.2.36.1.2001.1003.0.8003629900024197^ISO|52033-8^General correspondence^LN
Note^LN|||20140825103830|||||||||2671351T^Doctor^Good^^^Dr^^^AUSHICPR||||||20140825103830||PHY|F||
^^^20140825103830
OBX|1|ED|PDF^Display format in PDF^AUSPDI|Supporting Letter|^application^pdf^Base64^...||||||F|||20170322
OBX|1|ED|RTF^Display format in RTF^AUSPDI|Supporting Letter|^application^rtf^Base64^...||||||F

ORC|RE||12123-4^Good Hospital^1.2.36.1.2001.1003.0.8003629900024197^ISO||CM|||||||
0191324T^MCINTYRE^ANDREW^^^^^^AUSHICPR^L^^^UPIN
OBR|5||12123-4^Good Hospital^1.2.36.1.2001.1003.0.8003629900024197^ISO|52070-0^Workers compensation^LN|||
20140825103830|||||||||2671351T^Doctor^Good^^^Dr^^^AUSHICPR||||||20140825103830||PHY|F||^^^20140825103830
OBX|1|ED|PDF^Display format in PDF^AUSPDI|claimform1|^application^pdf^Base64^...||||||F|||20170322
```

4.27 Referencing other documents

To refer to another document under another OBR then the OBR can be referenced using an OBX EI (Entity Identifier) with a OBX-3 Observation Identifier value of LP72255-0^Citation^LN.

e.g.

OBX|4|EI|LP72255-0^Citation^LN||1234^ACME Pathology^7654^AUSNATA|||||F

Receivers may provide navigation between results using this information.

Hospital discharge summary (record artifact)Hospital to GP discharge summary (record artifact)Referral to exercise physiologist (procedure)Discharge summary to pharmacist (record artifact)Discharge summary to community health service (record artifact)Discharge summary to GP (record artifact)Enhanced primary care referral (procedure)

5 Observation Ordering

5.1 PURPOSE

The Order Entry transaction set provides for the transmission of orders or information about orders between applications that capture the order, by those that fulfill the order, and other applications as needed. An order is a request for material or services, usually for a specific patient. These services include medications from the

pharmacy, clinical observations (e.g., vitals, I&Os) from the nursing service, tests in the laboratory, food from dietary, films from radiology, linens from housekeeping, supplies from central supply, an order to give a medication (as opposed to delivering it to the ward), etc. This document focuses on tests in the laboratory.

Most orders are associated with a particular patient. However, the Standard also allows a department to order from another ancillary department without regard to a patient (e.g., floor stock), as well as orders originating in an ancillary department (i.e., any application may be the placer of an order or the filler of an order).

We refer to the person or entity who places the order as the placer. We refer to the person or entity that carries out the order as the filler (producer in ASTM terminology). In the case where the person or entity that carries out the order also requests the order, this person or entity is referred to as the filler and placer of the order. The filler may also request another application to assign a filler or placer order number.

This chapter defines the transactions at the seventh level, i.e., the abstract messages.

In HL7 V 2.4 new message types were introduced to accommodate automated laboratory equipment. These new message types are:

- OMG^O19—General clinical order message.
- ORG^O20—General clinical order acknowledgement message.
- OML^O21—Pathology order.
- ORL^O22—Pathology order response.
- OUL^R21—Unsolicited pathology observation.

These new message types contain the following new segments:

- SAC—Specimen and container details.
- TCD—Test code details.
- SID—Substance identifier.

For further detail on these segments refer to HL7 V2.4 chapter 13 - Laboratory Automation. These new segments, message types and trigger event codes should not be used in the Australian context unless there is mutual agreement.

In the Australian context the following message type and trigger event codes shall be used:

- ORM^O01 - General Order Message
- ORU^R01 - Observation Result (Unsolicited)
- ORR^O02 - Order Receipt
- ACK^R01 - Acknowledgment Result (HL7 V2.4, section 7.3.1)
- ACK^O01 - General Acknowledgement or order

5.1.1 Preface (organization of this chapter)

This chapter has a General section that describes the trigger events, message definitions, segments and examples for the specific type of order messages. The section about a type of order is organized into background and overview, message structure, and message segments (that are specific to the order class in question). Special discussions of the use of fields, segments or messages, and examples are included. Segments are introduced in order of occurrence in a message. A list of allowable values for a field is included in the body of the text, along with the field definition for easier reference.

5.1.2 Glossary

5.1.2.1 Filler:

The application responding to, i.e., performing, a request for services (orders) or producing an observation. The filler can also originate requests for services (new orders), add additional services to existing orders, replace existing orders, put an order on hold, discontinue an order, release a held order, or cancel existing orders

5.1.2.2 Observation segment:

An OBX segment defined in Section 4: Observation Reporting

5.1.2.3 Order:

A request for a service from one application to a second application. The second application may in some cases be the same; i.e., an application is allowed to place orders with itself.

5.1.2.4 Order detail segment:

One of several segments that can carry order information. Examples are OBR and RXO. Future ancillary-specific segments may be defined in subsequent releases of the Standard if they become necessary.

5.1.2.5 Placer:

The application or individual originating a request for services (order).

5.1.2.6 Placer order group:

A list of associated orders coming from a single location regarding a single patient.

5.2 ORM - general order message (event O01)

The function of this message is to initiate the transmission of information about an order. This includes placing new orders, cancellation of existing orders, discontinuation, holding, etc. ORM messages can originate also with a placer, filler, or an interested third party.

The trigger event for this message is any change to an order. Such changes include submission of new orders, cancellations, updates, patient and non-patient specific orders, etc.

The CTD segment in this trigger is used to transmit temporary patient contact details specific to this order.

Note: the ORM message contains the the tests ordered by the placer in the OBR segment, but it has no influence on the format or presentation of the report.

Order Message Structure

```
ORM^O01^ORM_O01          General Order Message
MSH
```

```
[
    PID                 Message Header
    [PD1]               Additional Demographics
    [
     PV1                Patient Visit
     [PV2]              Patient Visit- Additional Info
        ]
    [{
          IN1               Insurance
      [IN2]             Insurance Additional Info
      [IN3              Insurance Add'l Info - Cert.
     }
        ]
    [GT1]               Guarantor
    [{AL1}]             Allergy Information
]
{
    ORC                 Common Order
    OBR                 Order Detail Segment
    [CTD]               Contact Data
    [{DG1}]             Diagnosis
    [{OBX}]             Observation/Result
    [{FT1}]             Financial Transaction
    [{CTI}]             Clinical Trial Identification
    [BLG]               Billing Segment
}
```

This message struct differs from the international definition in that NTE segments have been removed and for use in pathology ordering OBR has become the default order detail segment. The same message can be used for medication and diet orders where the OBR is replaced with other order detail segments.

The initial response to an order is usually a generic ACK^O01 indicating Acceptance of the message, but can be an application level ORR^O01 message

General Accept ACK Structure

```
ACK^O01^ACK         General Acknowledgment
MSH                 Message Header
MSA                 Message Acknowledgment
[ ERR ]             Error
```

The Filler application responds to the Order and can potentially return further details, such as the Filler Order Number. The ORC/OBR segments are optional however. This message is usually delayed until the specimen has been collected/received and a laboratory number has been allocated. The Filler Order number is not the same as the Laboratory Number but often includes the Lab No as part of the identifier.

Order Response Message

```
ORR^O02^ORR_O02      General Order Acknowledgment
MSH                  Message Header
MSA                  Message Acknowledgment
[ERR]                Error
[
[PID                 Patient Identification
```

```
  {
  ORC                Common Order
  OBR                Order Detail Segment
  }
]
```

5.3 OSQ/OSR- query response for order status (event Q06)

Order Status Query

```
OSQ^Q06^OSQ_Q06       Order Status Query
MSH                   Message Header
QRD                   Query Definition
[ QRF ]               Query Filter
[ DSC ]               Continuation Pointer
```

Query Response

```
OSQ^Q06^OSQ_Q06            Order Status Response
MSH                        Message Header
MSA                        Message Acknowledgment
[ERR]                      Error
QRD                        Query Definition
[QRF]                      Query Filter
[
    [PID]                  Patient Identification
    {
      ORC                  Common Order
      OBR                  Order Detail
          [{OBX}]              Observation result/detail
      [{CTI}]              Clinical Trial Identification
    }
]
[DSC]                      Continuation Pointer
```

The QRD and QRF segments are defined in 2.1 Message Control Segments (see page 27). The subject filters contained in the QRD and QRF segments describe the kind of information that is required to satisfy the request. They are defined by local agreement between the inquiring system and the ancillary system. See the Implementation Guide for detailed examples of the use of query filter fields. 4.4.3.1 Query usage notes

> The Set ID fields in the various segments (including PID) are used to count the number of segments of one kind transmitted at one level of the hierarchy.
>
> The Query Result Level field of the QRD determines the amount of data requested. See Chapter 5, Section 5.10.5.3, “QRD - original style query definition segment.” in the HL7 International V2.4 Standard.

The OSQ message is a record-oriented query that has the structure as the regular QRY message. OSQ is included here for the convenience of implementers.

5.4 ORC SEGMENT

The ORC segment is common to many order messages.

5.4.1 ORC - common order segment

The Common Order segment (ORC) is used to transmit fields that are common to all orders (all types of services that are requested). The ORC segment is required in the Order (ORM) message. ORC is mandatory in Order Acknowledgment (ORR) messages if an order detail segment is present, but is not required otherwise.

In some cases, the ORC may be as simple as the string ORC|OK|<placer order number>|<filler order number>|<cr>.

If details are not needed for the order, the order detail segment may be omitted. For example, to place an order on hold, one would transmit an ORC with the following fields completed: ORC-1-order control with a value of HD, ORC-2-placer order number , and ORC-3-filler order number.

In the outpatient Medicare payment setting, a HL7 pathology order relates to a single episode - instance or occurrence. As compared to the hospital inpatient setting the request may be part of a larger episode of care and hence only the placer order number is used and not a placer group number. Generally there is more than one test per pathology request form, e.g. FBC, UE and LFT, where each test must be ordered using an ORC/OBR segment pair. In the FBC, UE and LFT example the order would be contained in one MSH segment with 3 separate ORC/OBR pairs for each orderable request. The ORC segment contains the order identification information where the *Placer Order Number* identifies each order in both the ORC and OBR segments. The episode is identified by a *Placer Group Number* contained in the ORC segment only. For each requested test the same *Placer Order Number* can be used or different numbers can be allocated to each requested test. The recommended approach is that different *Placer Order Numbers* are used for each test ordered. The Placer Group Number links all orders for the patient episode into a single request.

There is some overlap between fields of the ORC and those in the order detail segments. These are described in the succeeding sections.

5.4.1.0 ORC field definitions

HL7 Attribute Table – ORC – Common Order

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	2	ID	R	N	00119	00215	Order Control
2	250**	EI	C			00216	Placer Order Number
3	250**	EI	C			00217	Filler Order Number
4	250**	EI	O			00218	Placer Group Number
5	2	ID	O	N	00038	00219	Order Status
6	1	ID	O		00121	00220	Response Flag
7	200	TQ	O	Y		00221	Quantity/Timing
8	200	CM	O			00222	Parent
9	26	TS	O			00223	Date/Time of Transaction
10	250	XCN	O	Y		00224	Entered By

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
11	250	XCN	O	Y		00225	Verified By
12	250	XCN	C*	Y		00226	Ordering Provider
13	80	PL	O			00227	Enterer's Location
14	250	XTN	O	Y/2		00228	Call Back Phone Number
15	26	TS	O			00229	Order Effective Date/Time
16	250	CE	O			00230	Order Control Code Reason
17	250	CE	O			00231	Entering Organization
18	250	CE	O			00232	Entering Device
19	250	XCN	O	Y		00233	Action By
20	250	CE	O		00339	01310	Advanced Beneficiary Notice Code
21	250	XON	O	Y		01311	Ordering Facility Name
22	250	XAD	O	Y		01312	Ordering Facility Address
23	250	XTN	O	Y		01313	Ordering Facility Phone Number
24	250	XAD	O	Y		01314	Ordering Provider Address
25	250	CWE	O	N		01473	Order Status Modifier

ORC use notes:

* ALERT: Variance with HL7 2.4 International.

** ALERT: The field length of ORC-2, ORC-3 and ORC-4 of 250 characters for Australian usage is a variance to the HL7 V 2.4 field length of 22 characters.

a) placer order groups

The Standard supports a mechanism to collect several orders together in a group. Most often this is used to represent an "ordering session" for a single patient.

An order group is a list of orders (ORCs) associated with an ORC-4-placer group number. A group is established when the placer supplies a placer group number with the original order. The order group consists of all the ORCs and order detail segments that have the same placer group number. Orders can be removed from the group using cancel, or added using the replacement or parent-child mechanisms.

New orders cannot otherwise be added to the group.

b) duplicate fields

The ORC is intended to uniformly define the fields that are common to all orders (i.e., requested services). Some ORC fields are duplicated in some order detail segments (e.g., OBR, RXO). For example, ORC-2-placer order number has the same meaning and purpose as OBR-2-placer order number field. This promotes upward compatibility with past versions and ASTM.

The rule for using these fields is that the value must appear in the order detail segment if it does not appear in the ORC. However, it is recommended to transmit the field value in both places to avoid confusion.

c) parent/child - cancel, hold, discontinue

During transmission of a request to cancel, hold, or discontinue a parent order, the request is intended to apply recursively to the parent order and all associated child orders.

For example:

1) An ECG application receives an order for three ECGs on successive mornings.

2) The ECG application creates three child orders, one for each requested ECG.

3) The first daily ECG has already been performed when a request is received to cancel the original parent order. (The parent is beyond the point of cancellation.)

4) The remaining, unperformed, children are cancelled as a result of the request.

5.4.1.1 ORC-1 Order control (ID) 00215

Definition: Determines the function of the order segment. Refer to HL7 Table 0119 - Order control codes (see page 404) and their meaning for valid entries. Depending on the message, the action of the control code may refer to an order or an individual service. For example, the code CA in an OMP/ORM message cancels the order. The same code in an RDS message, cancels the dispense. Very detailed explanatory notes are given at the end of this section.

This field may be considered the “trigger event” identifier for orders. The codes fall roughly into the following three categories:

a) event request

Codes like “NW” (new order) and “CA” (cancel order request) are used to initiate an event.

b) event acknowledgment

Codes like “OK” (order accepted) and “CR” (cancelled as requested) are used to reply to the event request.

c) event notification

Codes like “OC” (order cancelled) and “OD” (order discontinued) are used to notify other applications that an event has occurred. No application reply is necessary.

Event request codes are intended to initiate an event. Event acknowledgment codes are intended to reply to an application that requested an event. Event notification codes are intended to notify another application that, e.g., the filler has performed some action on an order that the other application, e.g., the placer, needs to know.

Fillers, placers, and other applications can use event requests, event acknowledgments, and event - notification-type trigger events interchangeably. However, certain order control codes can originate only from the filler (e.g., CR) and others can only originate from the placer (e.g., CA).

Refer to HL7 Table 0119 - Order control codes (see page 404).

5.5.1.1.1 Table notes for order control codes of ORC

a) CA

A cancellation is a request not to do a previously ordered service. Confirmation of the cancellation request is provided by the filler, e.g., a message with an *ORC-1-order control* value of CR.

b) UC

An unable-to-cancel code is used when the ordered service is at a point that it cannot be cancelled by the filler or when local rules prevent cancellation by the filler. The use of this code is dependent on the value of *ORC-6-response flag*.

c) DC

A discontinue request code is used to stop an ongoing ordered service. It is not the same as a cancellation request, which is used in an attempt to prevent an order from happening.

d) RP, RQ, RU, RO

A replacement is the substitution of one or more orders for one or more previously ordered services.

The replaced orders are treated as though they were cancelled. If and when an ordered service can be replaced are local site-specific determinations.

Use the parent/child order control codes if the site specifies that the original order must remain intact. Do not use the replacement codes under this circumstance.

For each order to be replaced, use an *ORC-1-order* control value of RP (request for a replacement going to a filler) or RU (an unsolicited replacement created by the filler) used by the filler to notify the placer and/or other systems). By local agreement, the ORC segment (with RP or RU) may be followed by its original order detail segment. The ORC segments (with RP or RU) must be followed by an ORC segment with an *ORC-1-order* control value of RO (indicating the replacement order). By local agreement, the ORC with the RO value may be followed by an order detail segment.

For example, suppose that an ancillary application were replacing two OBR orders with three different orders. The sequence of segments would be as follows:

Figure 5-1. RU and RO usage (example)

Segment	Order Control	Comment
ORC OBR	RU	1st replaced ORC 1st replaced order’s detail segment
ORC OBR	RU	2nd replaced ORC 2nd replaced order’s detail segment
ORC OBR	RO	1st replacement ORC 1st replacement order’s detail segment
ORC OBR	RO	2nd replacement ORC 2nd replacement order’s detail segment
ORC OBR	RO	3rd replacement ORC 3rd replacement order’s detail segment

Whether the OBR segments must be present is determined by the value of *ORC-6-response flag*.

The described replacement method will handle all possible cases of replacement: one-into-one, many-into-one, one-into-many, and many-into-many. If the placer sent this request to the filler with two RPs, and this was a response back from the filler to the placer, the two RUs (replaced unsolicited) would be two RQs (replaced as requested).

Figure 5-2. RQ and RO usage (example)

Segment	Order Control	Comment
ORC OBR	RQ	1st replaced ORC 1st replaced order's detail segment
ORC OBR	RQ	2nd replaced ORC 2nd replaced order's detail segment
ORC OBR	RO	1st replacement ORC 1st replacement order's detail segment
ORC OBR	RO	2nd replacement ORC 2nd replacement order's detail segment
ORC OBR	RO	3rd replacement ORC 3rd replacement order's detail segment

e) RP, RQ

The order replace request code permits the order filler to replace one or more new orders with one or more new orders, at the request of the placer application.

f) RU

The unsolicited replacement code permits the filler application to notify another application without being requested from the placer application.

g) RO, RQ

The replacement order code is sent by the filler application to another application indicating the exact replacement ordered service. It is used with the RP and RU order control codes as described above.

h) RP, RQ, RU, RO

The rules for the order numbers in ORC segments with an order control value of RO are determined by the replacement type (RP or RU).

In the case of the RU type (i.e., unsolicited replacement by the filler), the filler order number is generated as usual by the filler application. The placer order number is identical to the placer order number of the first transmitted ORC with an order control value of RU.

In the case of the RP type (i.e., a replacement request from another application to the filler), the placer order number is generated by the placer application using the procedure for new orders.

The filler order number is generated by the filler application using the procedure identical for new orders.

If a replacement sequence is used in an ORU message (i.e., during results reporting), the following are the recommended segments to be used for the replacement orders:

1) ORC with an order control value of RO

2) Any OBR segments (can be replaced by any order detail segments)

3) Optionally followed by observation result segments (OBX)

i) PA, CH

The parent (PA) and child (CH) order control codes allow the spawning of "child" orders from a "parent" order without changing the parent (original order). One or more ORC segments with an *ORC-1-order control* value of PA are followed by one or more ORC segments with an *ORC-1-order control* value of CH. Whether OBR segments must be present is determined by the value of *ORC-6-response flag*.

For example, suppose that a microbiology culture produced two organisms and corresponding susceptibility reports. Then the sequence of segments would be as follows:

Figure 5-3. Example of two child orders

Segment	Order control	Comment
ORC ORC OBR	PA CH	1st parent ORC 1st child ORC 1st child order
ORC OBR	CH	2nd child ORC 2nd child order

The assignment of placer order numbers in the parent-child paradigm depends on whether the placer or filler creates the child order and in the latter case, on whether the placer supports the SN/NA transaction. If the placer creates the child orders it will assign their placer order numbers according to its usual procedures. If the filler creates the child orders there are two possibilities: each child will inherit the placer order number of its parent, or the filler will use the SN/NA transaction to request that the placer assign a placer order number. In either case, the filler application creates the filler order numbers of the children according to its usual procedures.

Whenever a child order is transmitted in a message the ORC segment's *ORC-8-parent* is valued with the parent's filler order number (if originating from the filler) and with the parent's placer order number (if originating from the filler or if originating from the placer).

The parent-child mechanism can be used to "expand" a parent order (e.g., an order for three EKGs on successive mornings).

j) RE

The observations-to-follow code is used to transmit patient-specific information with an order. An order detail segment (e.g., OBR) can be followed by one or more observation segments (OBX). Any observation that can be transmitted in an ORU message can be transmitted with this mechanism. When results are transmitted with an order, the results should immediately follow the order or orders that they support.

In this version of HL7, results can be transmitted with an order as one or more OBX segments without the necessity of including the ORC and OBR segments.

Observations can be transmitted in an ORU message without using an ORC. There are times when it is necessary to transmit information not included in the OBR segments of the ORU message. In this case, it is recommended that the ORC be included in the ORU message.

The order control value of RE is required only in ORM messages to indicate that an order is followed by observation results (OBX). The RE code is not necessary in the ORU message because it is expected that the OBR segments can be followed by observation results (OBX).

k) RR

Left in for backward compatibility. In the current version it is equivalent to an accept acknowledgment. The request-received code indicates that an order message has been received and will be processed later. The order has not yet undergone the processing that would permit a more exact response.

l) SN, NA, NW

There are three circumstances that involve requesting an order number (*ORC-2-placer order number* or ORC-3-filler order number):

1) When the filler application needs to request an *ORC-3-filler order number* from a centralized application (e.g., HIS)

2) When the filler application needs to request an *ORC-2-placer order number* from some other application (e.g., Order Entry)

3) When an application (not the filler application) wants to assign an *ORC-3-filler order number* for a new order

1) The filler application needs a centralized filler order number

SN - The send order number code provides a mechanism for the filler to request an *ORC-3-* filler order number from some centralized application (called “other” in the table below), such as a central HIS, by sending an ORM message containing an *ORC-1-order control* value of SN. This ORC has a null *ORC-3-filler order number* and an *ORC-2-placer order number* created by the filler application when the filler originates the order.

The ORM (SN type) message can be acknowledged by two methods:

i) By an ORR message containing an *ORC-1-order control* value of OK. An unsolicited ORM message can be sent at a future time, containing an ORC with *ORC-1-order* control value of NA.

ii) By an ORR message containing an *ORC-1-order control* value of NA as described below.

NA - The number assigned code allows the “other” application to notify the filler application of the newly-assigned filler order number. *ORC-1-order control* contains value of NA, *ORC-2-placer* order number (from the ORC with the SN value), and the newly-assigned filler order number.

Note: Both the placer order number and the filler order number have the filler’s application ID.

Code	From	ORC-2-Placer Order Number	ORC-3-Filler Order Number
SN NA	filler application filler application	placer order number^filler application ID placer order number^filler application ID	null filler order number^filler application ID

2) The filler application needs a placer order number

SN - The send order number code provides a mechanism for the filler application to request an *ORC-2*-placer order number from another application (called "other" in the table below) by sending an ORM message containing an *ORC-1-order control* value of SN. This ORC has a null *ORC-2-placer order* number and an *ORC-3-filler order number* created by the filler application when the filler originates the order.

The ORM (SN type) message can be acknowledged by two methods:

i) By an ORR message containing an *ORC-1-order control* value of OK. An unsolicited ORM message can be sent at a future time, containing an *ORC-1-order control* value of NA.

ii) By an ORR message containing an *ORC-1-order control* value of NA as described below.

NA - The number assigned code allows the "other" application to notify the filler application of the newly-assigned *ORC-2-placer order number*. The ORC contains an *ORC-1-order control* value of NA, the newly-assigned *ORC-2-placer order number*, and the *ORC-3-filler order number* (from the ORC with the SN value).

Note: The new *ORC-2-placer order number* has the placer's application ID.

Code	From	ORC-2-Placer Order Number	ORC-3-Filler Order Number
SN NA	filler application other application	null placer order number^filler application ID	filler order number^filler application ID filler order number^filler application ID

3) An application wants to assign a filler order number

NW - When the application creating an order (not the filler application) wants to assign a filler order number for a new order

or

RO- (RO following an RP). In this case, the "other" application completes ORC-3-filler order number, using the filler application ID as the second component of the filler order number.

Code	From	ORC-2-Placer Order Number	ORC-3-Filler Order Number
NW or RO	other application to the filler	placer order number^placer application ID	filler order number^filler application ID

m) CN

The combined result code provides a mechanism to transmit results that are associated with two or more orders. This situation occurs commonly in radiology reports when the radiologist dictates a single report for two or more exams resented as two or more orders. For example, knee and hand films for a rheumatoid arthritis patient might generate a single dictation on the part of the radiologist.

When such results are reported the CN code replaces the RE code in all but the last ORC, and the results follow the last ORC and its OBR. An example follows of a single report following three ORCs:

MSH|...<cr>

PID|...<cr>

ORC|CN|...<cr>

OBR|1|A4461XA^HIS|81641^RAD|73666^Bilateral Feet|...<cr>

ORC|CN|...<cr>

OBR|2|A4461XB^HIS|81642^RAD|73642^Bilateral Hand PA|...<cr>

ORC|RE|...<cr>

OBR|3|A4461XC^HIS|81643^RAD|73916^Bilateral Knees|...<cr>

OBX|1|CE|73916&IMP|1|Radiologist's Impression|...<cr>

OBX|2|CE|73642&IMP|1|Radiologist's Impression|...<cr>

OBX|3|FT|73642&GDT|1|Description|...<cr>

n) UA

An unable-to-accept code is used when a new order cannot be accepted by the filler. Possible reasons include requesting a prescription for a drug which the patient is allergic to or for an order which requires certain equipment resources which are not available such that the order cannot be filled. Note that this is different from the communication level acceptance as defined within the MSA segment.

o) RF

RF accommodates requests by both the filler or the placer. The filler may be requesting refill authorization from the placer. A placer system may be requesting a refill to be done by the filler system.

p) AF

AF is a response back from the placer authorizing a refill or quantity of refills.

q) DF

DF indicates that the placer will not authorize refills for the order. The order control code reason may be used to indicate the reason for the request denial. Some suggested values include:

AA Patient unknown to the provider

AB Patient never under provider care

AC Patient no longer under provider care

AD Patient has requested refill too soon

AE Medication never prescribed for the patient

AF Patient should contact provider first

AG Refill not appropriate

Note that these values originate from the NCPDP SCRIPT Response Segment Code List Qualifiers.

r) FU

FU notifies the placer that the filler issued a refill for the order at the patient's request.

s) OF

OF directly responds to the placer system's request for a refill

t) UF

UF indicates an application level denial by the filler system to an authorized refill request.

u) LI, UN

Use only with Patient Care problems or goals, Chapter 12 of the International Standard v2.4.

v) PR

PR indicates that this ORC is part of an ORU structure containing previous observation, which is embedded in the order.

At least two main use cases require that the complete results of the previous observations be transmitted with the order.

- Diagnostic laboratories referring tests to another lab for either confirmation of results (HIV, etc.) or due to not being equipped to do the tests (genetic testing, etc.).
- Diagnostic laboratories sending test results to Knowledge Bases for the automated generation of diagnostic comments for inclusion into the lab report.

5.4.1.2 ORC-2 Placer order number (EI) 00216

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is the placer application's order number.

This field is a case of the Entity Identifier data type (See Data types, "EI - Entity Identifier"). The first component is a string that identifies an individual order (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. An implementation is HL7 compliant when the number of characters for this field is increased to accommodate applications that require a greater number of characters for the Placer order number. It is assigned by the placer (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second through fourth components contain the ID of the placer in the same form as the HD data type (Data types, "HD - Hierarchic designator").

There are three situations in which the true placer is somewhat arbitrary (and thus not unique):

a) in *ORC-1-order control* value of RO, following an RU replacement;

b) in *ORC-1-order control* value of CH (child orders); and

c) in *ORC-1-order control* value of SN (send number).

See the Table Notes under *ORC-1-order control* for the details of how the *ORC-2-placer order number* is assigned in these cases.

ORC-2-placer order number is the same as *OBR-2-placer order number*. If the placer order number is not present in the ORC, it must be present in the associated OBR and vice versa. If both fields, *ORC-2-placer* order number and *OBR-2-placer order number* are valued, they must contain the same value. When results are transmitted in an ORU message, an ORC is not required, and the identifying placer order number must be present in the OBR segments.

These rules apply to the few other fields that are present in both ORC and OBR for upward compatibility (e.g., quantity/timing, parent numbers, ordering provider, and ordering call back numbers).

To ensure uniqueness of the identifying code of the order number, a suggested method is to use the first two characters of a town prefixed to the surgery telephone number eg IP38100001. For hospital an appropriate site code may be MH-CN for Mater Hospital Cairns and MH-WL for Mater Hospital Woolongong.

5.4.1.3 ORC-3 Filler order number (EI) 00217

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is the order number associated with the filling application. It is a case of the EI - Entity Identifier data type (see page 156). Its first component is a string that identifies an order detail segment (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. An implementation is HL7 compliant when the number of characters for this field is increased to accommodate applications that require a greater number of characters for the Filler order number. It is assigned by the order filler (receiving) application. This string must uniquely identify the order (as specified in the order detail segment) from other orders in a particular filling application (e.g., clinical laboratory). This uniqueness must persist over time.

The second through fourth components contain the filler application ID, in the form of the HD data type (see HD - hierarchic designator (see page 159)). The second component is a user-defined coded value that uniquely defines the application from other applications on the network. A limit of six (6) characters is suggested but not required. The second component of the filler order number always identifies the actual filler of an order.

A given institution or group of intercommunicating institutions should establish a list of applications that may be potential placers and fillers of orders and assign each a unique application ID. The application ID list becomes one of the institution's master dictionary lists that is documented in Chapter 8 of the Internatiional standard v2.4. Since third party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the filler application ID in this field may not be the same as any sending and receiving application on the network (as identified in the MSH segment).

ORC-3-filler order number is the same as *OBR-3-filler order number*. If the filler order number is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments.

The *filler order number (OBR-3 or ORC-3)* also uniquely identifies an order and its associated observations. For example, suppose that an institution collects observations from several ancillary applications into a common database and this common database is queried by yet another application for observations. In this case, the filler order number and placer order number transmitted by the common database application would be that of the original filler and placer, respectively, rather than a new one assigned by the common database application.

Similarly, if a third-party application, not the filler or placer, of an order were authorized to modify the status of an order (say, cancel it), the third-party application would send the filler an ORM message containing an ORC segment with *ORC-1-order control* equal to "CA" and containing the original placer order number and filler order number, rather than assign either itself.

To ensure uniqueness of the identifying code of the filler number, the pathology provider should use their NATA accreditation number. For example, |Good Health Pathology^123546^AUSNATA|

5.4.1.4 ORC-4 Placer group number (EI) 00218

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field allows an order placing application to group sets of orders together and subsequently identify them. It is a case of an EI - Entity Identifier data type (see page 156).

The first component is a string that uniquely identifies all order groups from the given placer application. It is assigned by the placer application and may come from the same series as the placer order number of the ORC, but this is not required.

The second through fourth components constitute a placer application ID identical to the analogous components of *ORC-2-placer order number*.

The Placer Group Number links the group of ordered tests into a single episode. It is recommended that the placer group number be the same as the placer order number minus the 'counter' component.
For example, if ORC-2 is .... 3456-1^38100001^IP.... then ORC-4 is .... 3456^38100001^IP....

5.4.1.5 ORC-5 Order status (ID) 00219

Definition: This field specifies the status of an order. Refer to *HL7 Table 0038 - Order status* for valid entries. The purpose of this field is to report the status of an order either upon request (solicited), or when the status changes (unsolicited). It does not initiate action. It is assumed that the order status always reflects the status as it is known to the sending application at the time that the message is sent. Only the filler can originate the value of this field.

Although *HL7 Table 0038 - Order status* contains many of the same values contained in HL7 Table 0119 - Order control codes (see page 404) and their meaning, the purpose is different. Order status may typically be used in a message with an *ORC-1-order control* value of SR or SC to report the status of the order on request or to any interested party at any time.

HL7 Table 0038 - Order status

Value	Description
A	Some, but not all, results available
CA	Order was cancelled
CM	Order is completed
DC	Order was discontinued
ER	Error, order not found
HD	Order is on hold
IP	In process, unspecified

Value	Description
RP	Order has been replaced
SC	In process, scheduled

5.4.1.6 ORC-6 Response flag (ID) 00220

Definition: This field allows the placer (sending) application to determine the amount of information to be returned from the filler. Sometimes the requested level of response may not be possible immediately, but when it is possible, the filler (receiving) application must send the information. When the field is null, D is the default value of the field. Refer to HL7 Table 0121 - Response flag for valid entries.

HL7 Table 0121 - Response flag

Value	Description
E	Report exceptions only
R	Same as E, also Replacement and Parent-Child
D	Same as R, also other associated segments
F	Same as D, plus confirmations explicitly
N	Only the MSA segment is returned

5.4.1.7 ORC-7 Quantity/timing (TQ) 00221

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction

(ID)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field determines the priority, quantity, frequency, and timing of an atomic service. Order segments should be thought of as describing an atomic service. It is a composite field that is defined in detail in Data types, “Quantity/Timing (TQ) Definition.” For example, if an OBR segment describes a unit of blood, this field might request that three (3) such units be given on successive mornings. In this case *ORC-7-quantity/timing* would be “1^QAM^X3”. *ORC-7*-quantity/timing is the same as *OBR-27-quantity/timing*.

To send information about “collection time”, use the ‘text’ component of the TQ data type in either the ORC-7 or OBR-27.

ORC-7-quantity/timing is the same as *OBR-27-quantity/timing*. If the ORC-7 and OBR-27 are both valued, then both should be valued exactly the same. If the quantity/timing is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments.

5.4.1.8 ORC-8 Parent (CM) 00222

Components: <parent's placer order number (EI)> ^ <parent's filler order number (EI)>

Subcomponents of parent's placer order number: <entity identifier (ST)> & <namespace ID (IS) & <universal ID (ST)> & <universal ID type (IS)>

Subcomponents of parent's filler order number: <entity identifier (ST)> & <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Definition: This field relates a child to its parent when a parent-child relationship exists. The parent-child mechanism is described under *ORC-1-order control* notes.

The first component has the same format as *ORC-2-placer order number* The second component has the same format as *ORC-3-filler order number*. The components of the placer order number and the filler order number are transmitted in sub-components of the two components of this field.

ORC-8-parent is the same as *OBR-29-parent* . If the parent is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments.

5.4.1.9 ORC-9 Date/time of transaction (TS) 00223

Definition: This field contains the date and time of the event that initiated the current transaction as reflected in *ORC-1 Order Control Code.* This field is not equivalent to *MSH-7 Date and Time of Message* which reflects the date/time of the physical message.

5.4.1.10 ORC-10 Entered by (XCN) 00224

Components: In Version 2.3 and later, use instead of the CN data type. <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)>^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)> Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Definition: This field contains the identity of the person who actually keyed the request into the application. Note that this refers to the current transaction as reflected in *ORC-1 Order Control Code* . It provides an audit trail in case the request is entered incorrectly and the ancillary department needs to clarify the request. By local agreement, either the ID number or name component may be omitted.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

5.4.1.11 ORC-11 Verified by (XCN) 00225

Components: In Version 2.3 and later, use instead of the CN data type. <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof

(ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g.,MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed(ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Definition: This field contains the identity of the person who verified the accuracy of the entered request. Note that this refers to the current transaction as reflected in *ORC-1 Order Control Code*. It is used in cases where the request is entered by a technician and needs to be verified by a higher authority (e.g., a nurse). By local agreement, either the ID number or name component may be omitted.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

5.4.1.12 ORC-12 Ordering provider (XCN) 00226

Components: In Version 2.3 and later, use instead of the CN data type. <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)>^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Definition: This field contains the identity of the person who is responsible for creating the request (i.e., ordering physician). ORC-12-ordering provider is the same as *OBR-16-ordering provider*. If the ordering provider is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

This field should be valued if known.

5.4.1.13 ORC-13 Enterer's location (PL) 00227

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Definition: This field specifies the location (e.g., nurse station, ancillary service location, clinic, floor) where the person who entered the request was physically located when the order was entered. Note that this refers to the current transaction as reflected in *ORC-1 Order Control Code*. Only those subcomponents relevant to enterer's location should be valued (commonly nursing unit; facility; building; floor). The person who entered the request is defined in *ORC-10-entered by*.

5.5.1.14 ORC-14 Call back phone number (XTN) 00228

Components: [**N** NN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number to call for clarification of a request or other information regarding the order. *ORC-14-call back phone number* is the same as *OBR-17-order callback phone* number.

5.4.1.15 ORC-15 Order effective date/time (TS) 00229

Definition: This field contains the date/time that the changes to the request took effect or are supposed to take effect.

If *ORC-9-date/time of transaction* is after or equal to *ORC-15-order effective date/time* , the data values in the ORC and its subordinate segments took effect on the order effective date/time.

If *ORC-9-date/time of transaction* is before the time specified in *ORC-15-order effective date/time* , the data values in ORC and its subordinate segments are planned to take effect on the order effective date/time.

If *ORC-15-order effective date/time* is left blank, its value is assumed to be equal to that specified in *ORC*-9-date/time of transaction or *MSH-7-date/time of message* if the transaction date/time is blank.

In the case where the time specified in *ORC-15-order effective date/time* (for the order control code event in the same ORC segment) is different from the corresponding date/time in *ORC-7-quantity/timing* , the time specified in *ORC-15-order effective date/time* takes precedence. Thus if the ORC event is a discontinue request to the filler for a continuing order, and the order-effective date/time is prior to the end date/time of *ORC-7-quantity/timing* , the order effective date/time should take precedence. If the order identified in the ORC has children, the children which have not started should be canceled; if there is a child in process, it should be discontinued; if a child has progressed beyond the point where it can be discontinued, its status is unaffected.

5.4.1.16 ORC-16 Order control code reason (CE) 00230

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the explanation (either in coded or text form) of the reason for the order event described by the order control code (HL7 Table 0119 - Order control codes (see page 404)). Whereas an NTE after the order-specific segment (e.g., RXO, ORO, OBR) would provide a comment for that specific segment, the purpose of the order control code reason is only to expand on the reason for the order event.

ORC-16-order control code reason is typically not valued when *ORC-1-order control* is NW, although it could be. In the case of a canceled order, for example, this field is commonly used to explain the cancellation. A Pharmacy system that canceled a drug order from a physician because of a well documented allergy would likely report the fact of the allergy in this field.

If it canceled the order because of a drug interaction this field might contain at least the names (and codes,if needed) of the interacting substances, the text describing the interaction, and the level of severity of the interaction.

5.4.1.17 ORC-17 Entering organization (CE) 00231

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the organization that the enterer belonged to at the time he/she enters/ maintains the order, such as medical group or department. The person who entered the request is defined in *ORC-10 -entered by*.

5.4.1.18 ORC-18 Entering device (CE) 00232

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the physical device (terminal, PC) used to enter the order.

5.4.1.19 ORC-19 Action by (XCN) 00233

Components: In Version 2.3 and later, use instead of the CN data type. <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g.,MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)>^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Definition: This field contains the identity of the person who initiated the event represented by the corresponding order control code. For example, if the order control code is CA (cancel order request), this field represents the person who requested the order cancellation. This person is typically a care provider but may not always be the same as *ORC-12 ordering provider*.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

5.4.1.20 ORC-20 Advanced beneficiary notice code (CE) 01310

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates the status of the patient's or the patient's representative's consent for responsibility to pay for potentially uninsured services. This element is introduced to satisfy HCFA Medical Necessity requirements for outpatient services. This element indicates (a) whether the associated diagnosis codes for the service are subject to medical necessity procedures, (b) whether, for this type of service, the patient has been informed that they may be responsible for payment for the service, and (c) whether the patient agrees to be billed for this service. The values for this field are drawn from User-defined Table 0339 – Advanced beneficiary notice code.

User-defined Table 0339 – Advanced beneficiary notice code

Value	Description
1	Service is subject to medical necessity procedures
2	Patient has been informed of responsibility, and agrees to pay for service
3	Patient has been informed of responsibility, and asks that the payer be billed
4	Advanced Beneficiary Notice has not been signed

5.4.1.21 ORC-21 Ordering facility name (XON) 01311

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID Number (NM)> ^<check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)>^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the facility placing the order.

5.4.1.22 ORC-22 Ordering facility address (XAD) 01312

Components: In Version 2.3 and later, replaces the AD data type. <street address (SAD)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^<county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>^ <address validity range (DR)>

Definition: This field contains the address of the facility placing the order.

5.4.1.23 ORC-23 Ordering facility phone number (XTN) 01313

Components: [**N** NN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number of the facility placing the order.

5.4.1.24 ORC-24 Ordering provider address (XAD) 01314

Components: In Version 2.3 and later, replaces the AD data type. <street address (SAD)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^<county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)> ^ <address validity range (DR)>

Definition: This field contains the address of the care provider requesting the order.

5.4.1.25 ORC-25 Order status modifier (CWE) 01473

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST)>

Definition: This field is a modifier or refiner of the *ORC-5-Order status* field. This field may be used to provide additional levels of specificity or additional information for the defined order status codes. Unlike the Order Status field, which is controlled by an HL7 defined table, this field is a CE data type allowing applications to support an unlimited library of Order Status Modifier codes.

Usage Rule: This field may only be populated if the ORC-5-Order Status field is valued.

Examples: An LIS is processing an order with an order status of IP may send an update using the order status modifier to indicate the progress of the order through the laboratory or to indicate that the order has been sent to an external laboratory. Another example using the non-medical orders would be where a phone has been ordered delivered to a patient's room, but has been disconnected temporarily. The *ORC-5-*Order status indicates IP and the *ORC-25-Order status modifier* would indicate a disconnected status. A third example involves pharmacy dispenses. It is sometimes not enough to know the prescription is being dispensed. The *ORC-25-Order status modifier* would indicate if a label had been printed, the prescription filled, or the prescription sold.

5.5 Australian usage notes

To implement ordering between placers and Australian Pathology providers it is suggested that the process be simplified in the following ways:

APUTS order codes should be used in the *OBR-4 Universal Service Identifier* of the orders unless none are found suitable for eg. new tests. The RCPA Board approved Requesting Pathology Terminology Reference Set is available on the National Clinical Terminology Service[96].

State changes should be limited to NW (new) and CA (Cancel) from placer to filler. To replace a test cancel the previous order and create a new order.

It is common that the returning results (in ORU^R01 message) are not identical to what is ordered. At times the Filler will select a more appropriate test and in many case one result will satisfy multiple orders. Add on tests are also performed at times. The granularity of ordering is often controlled by Medicare regulations. Because of these factors a mechanism is required to allow placers to know their order has be dealt with, even if the tests performed by the filler do not match the ordered test exactly. (and will have a different *OBR-4 Universal Service Identifier*)

When tests are replaced by the Filler an OBR Segment with no associated OBX segments, (but identical *OBR-4 Universal Service Identifier* to the order) will be returned to mark the order as complete. The tests actually performed are transmitted as normal and may also include the placer order number but in many cases will not as one panel (eg E/LFTS) will replace orders for individual components (eg U&Es and LFTs). In the original order, each of these components will have been transmitted in a separate OBR with a unique Placer order Number. The placer Group number can be used to relate results without a matching order to the original requests. When copy doctors are used facilities may receive Placer Order Numbers and Placer Group numbers that are only relevant to the ordering provider. The value of the HD component of the EI data types will indicate the facility responsible for the order.

Orders being transmitted directly to the Filler are addressed using *MSH-6 Receiving Facility*.

Desired Copy Doctors for the result should be transmitted using *OBR-28 Result Copies To* in the order.

Placer Order Numbers, and Placer Group numbers must be unique within the facility producing the order and must be qualified by the HD component of the EI datatype (see page 156), which is the facility ID. In most cases this would be identical to the MSH Sending Facility.

Any complex clinical information required by the filler to interpret to results of the requested test can be transmitted to the filler in the OBX segments that follow the OBR segment. General text notes relating to the order can be transmitted in *OBR-13 Relevant Clinical Info.*

Billing Information is conveyed from the placer to the filler using the PV1 segment and this is detailed in Chapter 2 Patient Administration for Pathology (see page 21).

96 https://www.healthterminologies.gov.au/ncts/#/access

6 Identifiers

In health care messaging and healthcare generally it is vitally important that the correct test, procedure, report etc is done on the right patient and the results are consigned to the appropriate person. The use of identifiers plays a major role in ensuring clinical safety in messaging and the healthcare system.

The representation of healthcare identifiers used for patient, provider organisation and health identifiers in HL7 V2.x messages uses the common attributes of HL7 Table 0203 - Identifier Type and User-defined Table 0363 - Assigning Authority below.

HL7 Table 0203 - Identifier Type

Value	Description	Comment
ACSN	Accession ID	Accession Identifier
AM	American Express	Deprecated and replaced by BC in v 2.5.
AMA	American Medical Association Number	A physician identifier assigned by the AMA.
AN	Account number	An identifier that is unique to an account.
ANON	Anonymous identifier	An identifier for a living subject whose real identity is protected or suppressed Justification: For public health reporting purposes, anonymous identifiers are occasionally used for protecting patient identity in reporting certain results. For instance, a state health department may choose to use a scheme for generating an anonymous identifier for reporting a patient that has had a positive human immunodeficiency virus antibody test. Anonymous identifiers can be used in PID 3 by replacing the medical record number or other nonanonymous identifier. The assigning authority for an anonymous identifier would be the state/local health department.
ANC	Account number Creditor	Class: Financial A more precise definition of an account number: sometimes two distinct account numbers must be transmitted in the same message, one as the creditor, the other as the debitor. Kreditorenkontonummer
AND	Account number debitor	Class: Financial A more precise definition of an account number: sometimes two distinct account numbers must be transmitted in the same message, one as the creditor, the other as the debitor. Debitorenkontonummer

Value	Description	Comment
ANT	Temporary Account Number	Class: Financial Temporary version of an Account Number. Use Case: An ancillary system that does not normally assign account numbers is the first time to register a patient. This ancillary system will generate a temporary account number that will only be used until an official account number is assigned.
APRN	Advanced Practice Registered Nurse number	An identifier that is unique to an advanced practice registered nurse within the jurisdiction of a certifying board
ASID	Ancestor Specimen ID	A unique identifier for the ancestor specimen. All child, grandchild, etc. specimens of the ancestor specimen share the same Ancestor Specimen ID.
BA	Bank Account Number	Class: Financial
BC	Bank Card Number	Class: Financial An identifier that is unique to a person’s bank card. Replaces AM, DI, DS, MS, and VS beginning in v 2.5.
BCT	Birth Certificate	A number associated with a document identifying the event of a person’s birth.
BR	Birth registry number	An identifier unique within the Assigning Authority that is the official legal record of a person's birth.
BRN	Breed Registry Number	
BSNR	Primary physician office number	Betriebsstättennummer - for use in the German realm.
CC	Cost Center number	Class: Financial Use Case: needed especially for transmitting information about invoices.
CONM	Change of Name Document	A number associated with a document identifying a person’s legal change of name.
CZ	Citizenship Card	A number assigned by a person’s country of residence to identify a person’s citizenship.
CY	County number	

Value	Description	Comment
DDS	Dentist license number	An identifier that is unique to a dentist within the jurisdiction of the licensing board
DEA	Drug Enforcement Administration registration number	An identifier for an individual or organization relative to controlled substance regulation and transactions. Use case: This is a registration number that identifies an individual or organization relative to controlled substance regulation and transactions. A DEA number has a very precise and widely accepted meaning within the United States. Surprisingly, the US Drug Enforcement Administration does not solely assign DEA numbers in the United States. Hospitals have the authority to issue DEA numbers to their medical residents. These DEA numbers are based upon the hospital's DEA number, but the authority rests with the hospital on the assignment to the residents. Thus, DEA as an Identifier Type is necessary in addition to DEA as an Assigning Authority.
DI	Diner's Club card	Deprecated and replaced by BC in v 2.5.
DFN	Drug Furnishing or prescriptive authority Number	An identifier issued to a health care provider authorizing the person to write drug orders Use Case: A nurse practitioner has authorization to furnish or prescribe pharmaceutical substances; this identifier is in component 1.
DL	Driver's license number	
DN	Doctor number	
DO	Osteopathic License number	An identifier that is unique to an osteopath within the jurisdiction of a licensing board.
DP	Diplomatic Passport	A number assigned to a diplomatic passport.
DPM	Podiatrist license number	An identifier that is unique to a podiatrist within the jurisdiction of the licensing board.
DR	Donor Registration Number	
DS	Discover Card	Deprecated and replaced by BC in v 2.5.
DVW	DVA Card - White	Australian Department of Veterans' Affairs White card number.
DVG	DVA Card - Gold	Australian Department of Veterans' Affairs Gold card number.
DVO	DVA Card - Orange	Australian Department of Veterans' Affairs Orange card number.

Value	Description	Comment
DV	Veterans number	Australian Department of Veterans' number.
EI	Employee number	A number that uniquely identifies an employee to an employer.
EN	Employer number	
ESN	Staff Enterprise Number	An identifier that is unique to a staff member within an enterprise (as identified by the Assigning Authority).
FI	Facility ID	
GI	Guarantor internal identifier	Class: Financial
GL	General ledger number	Class: Financial
GN	Guarantor external identifier	Class: Financial
HC	Health Card Number	
JHN	Jurisdictional health number (Canada)	Class: Insurance 2 uses: a) UK jurisdictional CHI number; b) Canadian provincial health card number:
IND	Indigenous/ Aboriginal	A number assigned to a member of an indigenous or aboriginal group outside of Canada
LACSN	Laboratory Accession ID	A laboratory accession id is used in the laboratory domain. The concept of accession is used in other domains such as radiology, so the LACSN is used to distinguish a lab accession id from an radiology accession id
LANR	Lifelong physician number	Lebenslange Arztnummer - for use in German realm.
LI	Labor and industries number	
LN	License number	
LR	Local Registry ID	
MA	Patient Medicaid number	Class: Insurance

Value	Description	Comment
MB	Member Number	An identifier for the insured of an insurance policy (this insured always has a subscriber), usually assigned by the insurance carrier. Use Case: Person is covered by an insurance policy. This person may or may not be the subscriber of the policy.
MC	Patient's Medicare number	Class: Insurance
MCD	Practitioner Medicaid number	Class: Insurance
MCN	Microchip Number	
MCR	Practitioner Medicare number	Class: Insurance
MCT	Marriage Certificate	A number associated with a document identifying the event of a person’s marriage.
MD	Medical License number	An identifier that is unique to a medical doctor within the jurisdiction of a licensing board. Use Case: These license numbers are sometimes used as identifiers. In some states, the same authority issues all three identifiers, e.g., medical, osteopathic, and physician assistant licenses all issued by one state medical board. For this case, the CX data type requires distinct identifier types to accurately interpret component 1. Additionally, the distinction among these license types is critical in most health care settings (this is not to convey full licensing information, which requires a segment to support all related attributes).
MI	Military ID number	A number assigned to an individual who has had military duty, but is not currently on active duty. The number is assigned by the DOD or Veterans’ Affairs (VA).
MR	Medical record number	An identifier that is unique to a patient within a set of medical records, not necessarily unique within an application.
MRT	Temporary Medical Record Number	Temporary version of a Medical Record Number Use Case: An ancillary system that does not normally assign medical record numbers is the first time to register a patient. This ancillary system will generate a temporary medical record number that will only be used until an official medical record number is assigned.
MS	MasterCard	Deprecated and replaced by BC in v 2.5.
NBSNR	Secondary physician office number	Nebenbetriebsstättennummer - for use in the German realm.

Value	Description	Comment
NCT	Naturalization Certificate	A number associated with a document identifying a person's retention of citizenship in a particular country.
NE	National employer identifier	In the US, the Assigning Authority for this value is typically CMS, but it may be used by all providers and insurance companies in HIPAA related transactions.
NH	National Health Plan Identifier	Class: Insurance Used for the UK NHS national identifier. In the US, the Assigning Authority for this value is typically CMS, but it may be used by all providers and insurance companies in HIPAA related transactions.
NI	National unique individual identifier	Class: Insurance In the US, the Assigning Authority for this value is typically CMS, but it may be used by all providers and insurance companies in HIPAA related transactions. Note: In Australia is use for the Individual Healthcare identifier (IHI)
NII	National Insurance Organization Identifier	Class: Insurance In Germany a national identifier for an insurance company. It is printed on the insurance card (health card). It is not to be confused with the health card number itself. Krankenkassen-ID der KV-Karte
NIIP	National Insurance Payor Identifier (Payor)	Class: Insurance In Germany the insurance identifier addressed as the payor. Krankenkassen-ID des Rechnungsempfängers Use case: a subdivision issues the card with their identifier, but the main division is going to pay the invoices.
NNxxx	National Person Identifier where the xxx is the ISO table 3166 3-character (alphabetic) country code	
NOI**	National Organisation Identifier	In Australia is use for the Healthcare Providers Organisation identifier (HPI-O) or General Supporting Organisation (GSO) / My Health Record (PCEHR) Assigned Identity for Organisations (PAI-O) / Contracted Service Provider (CSP)
NP	Nurse practitioner number	An identifier that is unique to a nurse practitioner within the jurisdiction of a certifying board.

Value	Description	Comment
NPI	National provider identifier	Class: Insurance In the US, the Assigning Authority for this value is typically CMS, but it may be used by all providers and insurance companies in HIPAA related transactions. Note: In Australia is used for the Healthcare Providers Individual identifier (HPI-I)
NPIO	National provider at organisation identifier	An identifier that is unique for an individual healthcare provider at a healthcare organisation. It is the concatenation of a HPI-I identifier followed by an "@" and then a HPI-O identifier. e.g. "800361XXXXXXXXXX@800362YYYYYYYYY"
OD	Optometrist license number	A number that is unique to an individual optometrist within the jurisdiction of the licensing board.
PA	Physician Assistant number	An identifier that is unique to a physician assistant within the jurisdiction of a licensing board
PC	Parole Card	A number identifying a person on parole.
PCN	Penitentiary/ correctional institution Number	A number assigned to individual who is incarcerated.
PE	Living Subject Enterprise Number	An identifier that is unique to a living subject within an enterprise (as identified by the Assigning Authority).
PEN	Pension Number	
PI	Patient internal identifier	A number that is unique to a patient within an Assigning Authority.
PN	Person number	A number that is unique to a living subject within an Assigning Authority.
PNT	Temporary Living Subject Number	Temporary version of a Lining Subject Number.
PPIN	Medicare/CMS Performing Provider Identification Number	Class: Insurance An Identifier for a provider at a location in the CMS/Medicare program. This identifier type is only unique within the context of a location. The location is not integral to the identifier, it must be derived from the message context/content (e.g., this identifier associated to a location by association in a message or a message segment.)

Value	Description	Comment
PPN	Passport number	A unique number assigned to the document affirming that a person is a citizen of the country. In the US this number is issued only by the State Department.
PRC	Permanent Resident Card Number	
PRES	Prescriber Number	A Pharmaceutical Benefits Scheme (PBS) prescriber identifier assigned to an individual that identifies the right to act as a prescriber under that scheme.
PRN	Provider number	A number that is unique to an individual provider, a provider group or an organization within an Assigning Authority. Use case: This allows PRN to represent either an individual (a nurse) or a group/organization (orthopedic surgery team).
PT	Patient external identifier	
QA	QA number	
RI	Resource identifier	A generalized resource identifier. Use Case: An identifier type is needed to accommodate what are commonly known as resources. The resources can include human (e.g. a respiratory therapist), non-human (e.g., a companion animal), inanimate object (e.g., an exam room), organization (e.g., diabetic education class) or any other physical or logical entity.
RPH	Pharmacist license number	An identifier that is unique to a pharmacist within the jurisdiction of the licensing board.
RN	Registered Nurse Number	An identifier that is unique to a registered nurse within the jurisdiction of the licensing board.
RR	Railroad Retirement number	An identifier for an individual enrolled with the Railroad Retirement Administration. Analogous to, but distinct from, a Social Security Number
RRI	Regional registry ID	
RRP	Railroad Retirement Provider	Class: Insurance An identifier for a provider register within the CMS/Railroad Retirement Administration/Medicare program (a subprogram of the CMS/Medicare)
SID	Specimen ID	Identifier for a specimen. Used when it is not known if the specimen ID is a unique specimen ID (USID) or an ancestor ID (ASID).

Value	Description	Comment
SL	State license	
SN	Subscriber Number	Class: Insurance An identifier for a subscriber of an insurance policy which is unique for, and usually assigned by, the insurance carrier. Use Case: A person is the subscriber of an insurance policy. The person's family may be plan members, but are not the subscriber.
SP	Study Permit	A number associated with a permit identifying a person who is a resident of a jurisdiction for the purpose of education.
SR	State registry ID	
SS	Social Security number	
TAX	Tax ID number	
TN	Treaty Number/ (Canada)	A number assigned to a member of an indigenous group in Canada. Use Case: First Nation.
TPR	Temporary Permanent Resident (Canada)	A number associated with a document identifying a person's temporary permanent resident status.
U	Unspecified identifier	
UPIN*	Medicare/CMS (formerly HCFA)'s Universal Physician Identification numbers	Class: Insurance An identifier for a provider within the CMS/Medicare program. A globally unique identifier for the provider in the Medicare program.
USID	Unique Specimen ID	A unique identifier for a specimen.
VDI	Vendor Directory Identifier	A unique vendor identifier allocated to a provider directory entry (PractitionerRole or HealthcareService), typically used for routing secure messages
VN	Visit number	
VP	Visitor Permit	A number associated with a document identifying a person as a visitor of a jurisdiction or country.
VS	VISA	Deprecated and replaced by BC in v 2.5.

Value	Description	Comment
WC	WIC identifier	
WCN	Workers' Comp Number	
WP	Work Permit	A number associated with a permit for a person who is granted permission to work in a country for a specified time period.
XX	Organization identifier	

* UPIN must be used for Australian Medicare Provider numbers.

** NOI is not present in the most recently published table of HL7 0203 in HL7 v2.8.2, though it is has been accepted for publication in HL7 V2.9. The allocation of these identifiers is not always at the correct level of granularity and many organisations are not registered and alternative identifiers are often used. Pathology Labs are identified using the AUSNATA code with their NATA Organisation Accreditation number.

References:

- METeOR 290046, 'Person identifier',
- METeOR 270101, 'Medicare card number',
- METeOR 339127, 'Dept of Veterans' Affairs file number'.

User-defined Table 0363 - Assigning Authority

Value	Description	Comment
AUSHIC	Medicare Australia	
AUSDVA	Dept of Veteran's Affairs	
AUSNATA	National Association of Testing Authorities, Australia	
AUSLINK	Australian CentreLink	
AUSHICPR	Medicare Australia provider number	

Note: Values will be added to this list as needed

Table 6-1. Identifier examples

Identifier	Data type	Example Field	Message content	Comment
Patient Identifiers				
Medical record number	CX	PID-3	|7654321^^^RMH^MR|	In this example the assigning authority is "RMH" and the use of the assigning authority is to provide uniqueness of the patient identifier.
Individual Healthcare Identifier (IHI)	CX	PID-3	|8003608833357361^^^AUSHIC^NI|	
Medicare number and IHI	CX	PID-3	|2345678901^^^AUSHIC^MC~8003608833357361^^^AUSHIC^NI|	
Centrelink customer reference number	CX	PID-3	|456789012T^^^AUSLINK^AN|	METeOR identifier 270098 http://meteor.aihw.gov.au/content/index.phtml/itemId/270098viewed9May2012 viewed 2nd August 2016.
Health Care Card	CX	PID-3	|302668868J^^^^HC|	Should be used in compliance with legal regulations and legislation.
Medicare Card Number	CX	PID-3	|4496818481^^^AUSHIC^MC| |21882253741^^^AUSHIC^MC| |21882253741^^^AUSHIC^MC^^^200706|	(10 digit number example) (11 digit number example) (11 digit number with expiry date) For further details refer to: METeOR 270101 http://meteor.aihw.gov.au/content/index.phtml/itemId/270101 viewed 2nd August 2016.

Identifier	Data type	Example Field	Message content	Comment
Department of Veterans Affairs	CX	PID-3	|VX26655^^^AUSDVA^DVG| |NPSM268^^^AUSDVA^DVO| |QX123268^^^AUSDVA^DVW| |WX123268^^^AUSDVA|	First character= state code (N, V, Q, W, S or T with ACT included in NSW (N) and NT included in SA (S)). Second to 4th alpha characters = war code; if war code is 1 character then the following numeric identifier will be six digits; if war code is 3 characters the following numeric will be 4-6 characters. The total war code plus numeric identifier equals 7 characters. DVA card type: DVW = white; DVO = orange; DVG = gold. For further details refer to: METeOR 339127 http://meteor.aihw.gov.au/content/index.phtml/itemId/339127 viewed 2nd August 2016.
Driver's licence	CX	PID-3	|34567890^^^QLD^DL|	
Passport	CX	PID-3	|N4567890^^^AUSTRALIA&AUS&ISO^PPN^^20060401^20160401|	
Pension card	CX	PID-3	|123456789JA^^^^PEN|	
Centrelink Customer Reference Number	CX	PID-3	|123456789T^^^AUSLINK^AN|	Should be used in compliance with legal regulations and legislation.
Provider identifiers				
Medicare Provider number	CM	PRD-7	|049960CT^AUSHICPR^UPIN|	

Identifier	Data type	Example Field	Message content	Comment
	XCN	PV1-7	|2345678P^JONES^SUSAN^W^^DR^^^AUSHICPR^^^^UPIN|	
Medicare Prescriber number	CM	PRD-7	|049960CT^AUSHIC^PRES|	
	XCN	PV1-7	|049960CT^GREEN^Fred^P^^DR^^^AUSHIC^^^^PRES|	
Healthcare Provider Individual (HPI-I)	CM	PRD-7	|8003619900015717^AUSHIC^NPI|	
	XCN	PV1-7	|8003619900015717^SMITH^Helen^S^^Dr^^^AUSHIC^^^^NPI|	
Healthcare Provider Individual at an Organisation NPIO	CM	PRD-7	|8003619900015717@8003621566684455^AUSHIC^NPIO|	
	XCN	PV1-7	|8003619900015717@8003621566684455^SMITH^Helen^S^^Dr^^^AUSHIC^^^^NPIO|	
Organisation identifiers				

Identifier	Data type	Example Field	Message content	Comment
Healthcare Provider Organisation (HPI-0)	XON	ORC-21	|ABCD Organisation^L^8003621566684455^^^AUSHIC^NOI|	

7 Patient Referral

7.1.1 Purpose

The Patient Referral chapter defines the message set used in patient referral communications between mutually exclusive entities. These referral transactions frequently occur between entities with different methods and systems of capturing and storing data. Such transactions frequently traverse a path connecting primary care providers, specialists, payers, government agencies, hospitals, labs, and other healthcare entities. The availability, completeness, and currency of information for a given patient will vary greatly across such a spectrum.

The referral in this specification is viewed from the perspective of the provider as an individual, irrespective of his/her affiliation with a specific institution or campus. Events triggering this kind of message are not restricted to a hospital environment, but have a community-wide area of impact in which more extensive identification of patients and healthcare providers is needed. Therefore, a referral must contain adequate identification information to meet the broadly varying requirements of the dissimilar systems within the community.

This chapter describes the various events and resulting transactions that make up the referral message set. Examples have been provided to demonstrate the use of this specification within the events described. Each event example centers on a primary care provider's encounter with a patient.

7.1.2 Australian Localisation

The Australian Referral Message has both constrained and also extended the HL7 International version to allow transmission of a full patient history in one message including referral information, patient summary, allergies, medication history and patient care (HL7 2.4 Chapter 12); problems, goals and pathways. It also allows the inclusion of procedure reports, laboratory results and radiology reports. The message itself is a packaging format and the data it contains could be transmitted in other messages, for example ORU messages and medication messages. It is intended that recipients will unpack the contents and place data in the relevant sections of their own system. Referral messages do not equate to clinical data and much of the data that could be included could be transmitted in a batch of HL7 messages containing other message types. It does however create a single unit of transmission. This specification also includes the details required to transmit a patient summary as atomic data and use of this format would allow recipient systems to populate a patient history based on the senders information.

This specification covers the specifics of the referral message but the details of the segments containing the actual Observation data are specified in Chapter 4 - Observation Reporting (see page 201) of this Orders and Observations standard. The structure and display rules of the Orders and Observations standard apply to the Referral Standard observations and Patient summary and the clinical content of ORU messages can be inserted directly in a referral message. In fact a referral message should be considered a Referral header (the RF1 segment), details of providers (PRD segments), a collection of ORU message content (ORC,OBR,OBX segments) (Clinical, laboratory, radiology etc), a medication summary message and patient care messages covering problems, goals and pathways. Together this content provides for the transmission of a comprehensive patient summary for the purposes of referral, discharge summary and transfer of care etc.

Appendix 8 (see page 482) **defines a simplified referral profile. Section 7 Patient Referral defines a number of segments which allow more complex referral interactions but also have a significantly higher level of difficulty and use of this functionality will require negotiation with endpoints. For most purposes the simplified referral messages is recommended. Appendix 8 makes reference to this section for details.**

7.1.2.1 Addressing

The provider or facility identifier (in PRD-7) for the PRD marked with IR meaning "Intended Recipient" (in PRD-1) is used to address each instance of the message to an endpoint. Appendix 10 (see page 528) defines field mapping for addressing individual instances of a REF message to a provider or healthcare facility when using the Australian Profile for Provider Directory Services.

7.1.3 Patient referral and responses

When a patient is referred by one healthcare entity (e.g., a primary care provider) to another (e.g., a specialist or lab) or when a patient inquiry is made between two separate entities, little is known about the information each party requires to identify or codify the patient. The receiving entity may have no knowledge of the patient and may require a full set of demographics, subscriber and billing information, eligibility/coverage information, pre-authorization information, and/or clinical data to process the referral. If the receiving entity already has a record of the patient, the precise requirements for identifying that patient record will vary greatly from one entity to another. The existing record of a patient residing in the database of a specialist, a lab, or a hospital may require updating with more current information. In addition, providers receiving a referral often require detailed information about the provider making the referral, such as a physician’s name and address.

7.1.3.1 Patient referral

There are clear distinctions between a referral and an order. An order is almost always an intra-enterprise transaction and represents a request from a patient’s active provider to supporting providers for clearly defined services and/or results. While the supporting provider may exercise great discretion in the performance of

an order, overall responsibility for the patient's plan of treatment remains with the ordering provider. As such, the ordering provider retains significant control authority for the order and can, after the fact, cause the order to be canceled, reinstated, etc. Additionally, detailed results produced by the supporting provider are always reported back to the ordering provider, who remains ultimately responsible for evaluating their value and relevance. A referral, on the other hand, can be either an intra- or an inter enterprise transaction and represents not only a request for additional provider support but also a transfer of a portion or all of the responsibility for the patient's plan of treatment. Once the referral is made, the referring provider, during the transfer period, retains almost no control of any resulting actions. The referred-to provider becomes responsible for placing any additional orders and for evaluating the value and relevance of any results, which may or may not be automatically passed back to the referring provider. A referred-to provider may, in turn, also become a referring provider.

A referral message is used to support transactions related to the referral of a patient from one healthcare provider to another. This kind of message will be particularly useful from the perspective of a primary care provider referring a patient to a specialist. However, the application of the message should not be limited to this model. For example, a referral may be as simple as a physician sending a patient to another physician for a consultation or it may be as complex as a primary care provider sending a patient to a specialist for specific medical procedures to be performed and attaching the payor authorizations for those requested procedures as well as the relevant clinical information on the patient's case.

In a community model, stringent security requirements will need to be met when dealing with the release of clinical information. This message set facilitates the proper qualification of requests because the message packet will contain all the data required by any application in the community, including the necessary patient demographic information and the proper identification of the party requesting the information.

7.1.3.2 Responding to a patient referral

When a patient is referred by one provider to another or is pre-admitted, there is a great likelihood that sub sequent transactions will take place between the initiating entity (the referring or admitting physician) and the responding entity (the specialist or hospital). The subsequent transactions might include a variety of queries, orders, etc. Within those subsequent transactions, there must be a way for the initiating system to refer to the patient. The "generic" patient information included in the original referral or the pre-admit Patient Identification (PID) segment may not be detailed enough to locate the patient in the responding facility's database, unless the responding facility has assigned a unique identifier to the new patient. Similarly, the responding system may not have record retrieval capabilities based on any of the unambiguous, facility neutral data elements (like the Social Security Number) included in the original referral or pre-admit PID
segment. This problem could result in the responding system associating subsequent orders or requests with the wrong patient. One solution to this potential problem is for the responding system to utilize the RRI message and return to the initiating system the unique internal identifier it assigns to the patient, and with which it will primarily (or even exclusively) refer to that patient in all subsequent update operations. However, the intent of the RRI message is that it will supply the originator of the referral type message with sufficient patient demographic and/or clinical information to properly process continued transactions.

7.1.4 Application roles and data process

7.1.4.1 Application roles

This Australian Standard assumes that there are three roles* that an application can take on: a referring or referred-by provider application role, a referred-to provider application role, ~~a querying application role~~, and an auxiliary application role. These application roles define the interactions an application will have with other applications in the messaging environment. In many environments, any single application may take on more than one application role.

This Standard's definition of application roles does not intend to define or limit the functionality of specific products developed by vendors of such applications. Instead, this information is provided to help define the model used to develop this Standard, and to provide an unambiguous way for applications to communicate with each other.

*Variance: The International Standard has 4 roles. the additional roles is: querying application role.

7.1.4.2 The referring provider application role

A referring provider application requests the services of another healthcare provider (a referred-to provider) application. There may or may not be any association between the referring provider application and the receiving entity. Although in most cases a referral environment will be inter-enterprise in nature, it is not limited to that model and applies to intra-enterprise situations also. Because the referring provider application cannot exert any control over the referred-to provider application, it must send requests to modify the status of the referred-to provider application. The referring provider application will often assume an auxiliary application role once a patient has been accepted by another application. Once this happens, the referring provider application may receive unsolicited status updates from the referred-to provider application concerning the care of a patient.

The analog of a referring provider application in a non-automated environment might be a primary care provider diagnosing a patient with a problem that must in turn be referred to a specialist for a service. The primary care provider would contact the specialist and refer the patient into his care. Often, the specialist may not receive the patient into his care, preferring instead to refer the patient to another healthcare provider. The referring provider will indicate the diagnosis and any requested services, and the specialist to whom the patient is referred will indicate whether the referral will be accepted as specified. Once a patient referral has been accepted by the specialist, the specialist may send out updates to the primary care provider concerning the status of the patient as regards any tests performed, their outcomes, etc.

7.1.4.3 The referred-to provider application role

A referred-to provider application, in the referral model, is one that performs one or more services requested by another healthcare provider (referring provider). In other words, a referred-to provider application exerts control over a certain set of services and defines the availability of those services. Because of this control, no other application has the ability to accept, reject, or otherwise modify a referral accepted by a particular referred-to provider application.

Other applications can, on the other hand, make requests to modify the status of an accepted referral "owned by" the referred-to provider application. The referred-to provider application either grants or denies requests for information, or otherwise modifies the referrals for the services over which it exerts control.

Finally, the referred-to provider application also provides information about the referral encounter to other applications. The reasons that an application may be interested in receiving such information are varied. An application may have previously requested the status of the referral encounter, or it may simply be in terested in the information for its own clinical reporting or statistical purposes. There are two methods whereby the referred-to provider applications disseminate this information: by issuing unsolicited information messages to auxiliary applications, or by responding to queries made by querying applications.

The analog of a referred-to provider application in a non-automated environment might be a specialist such as a cardiologist. A patient does not generally go to a cardiologist for routine health care. Instead, a patient generally goes to a primary care provider, who may diagnose the patient with a heart ailment and refer that patient to a cardiologist. The cardiologist would review the information provided with the referral request and determine whether or not to accept the patient into his care. Once the cardiologist accepts the patient, anyone needing information on the status of the patient must then make requests to the cardiologist. In addition, the cardiologist may forward unsolicited information regarding the treatment of the patient back to the primary care provider. Once the cardiologist accepts the referred patient, he/she may determine that additional information regarding the patient is needed. It will often take the role of a querying application by sending a query message to the patient's

primary care provider and requesting additional information on demographics, insurance information, laboratory test results, etc.

7.1.4.4 The querying application role

This is unspecified in this Australian localisation but may be implemented by site-site negotiation.

Refer to section 11.2.2.4 in the HL7 2.4 Standard.

7.1.4.5 The auxiliary application role

Like querying applications, an auxiliary application neither exerts control over nor requests changes to a referral or a referred patient. They, too, are only concerned with gathering information about a particular referral. An auxiliary application is considered an “interested third-party,” in that it is interested in any changes to a particular referral or referred patient, but has no interest in changing it or controlling it in any way. An auxiliary application passively collects information by receiving unsolicited updates from a provider application.

The analog of an auxiliary application in a non-automated environment might be any person receiving reports containing referral information. For example, an insurance company may need information about the activities a patient experiences during specific referral encounters. Primary care providers may need to forward information regarding all referred patients to a payor organization.

In turn, a primary care provider may have the ability to track electronically a patient’s medical record. She or he would then be very interested in receiving any information regarding the patient (s)he has referred to a specialist.

7.1.5 Glossary

7.1.5.1 Benefits

The services payable under a specific payor plan. They are also referred to as an insurance product, such as professional services, prescription drugs, etc.

7.1.5.2 Clinical information

Refers to the data contained in the patient record. The data may include such things as problem lists, lab results, current medications, family history, etc. For the purposes of this chapter, clinical information is limited to diagnoses (DG1& DRG), results reported (OBX/OBR), and allergies (AL1).

7.1.5.3 Dependent

Refers to a person who is affiliated with a subscriber, such as spouse or child.

7.1.5.4 Eligibility/coverage

Refers to the period of time a subscriber or dependent is entitled to benefits.

7.1.5.5 Encounter

Refers to a meeting between a covered person and a healthcare provider whose services are provided.

7.1.5.6 Guarantor

Refers to a person who has financial responsibility for the payment of a patient account.

7.1.5.7 Healthcare provider

Refers to a person licensed, certified or otherwise authorized or permitted by law to administer health care in the ordinary course of business or practice of a profession, including a healthcare facility.

7.1.5.8 Payor

Indicates a third-party entity who pays for or underwrites coverage for healthcare expenses. A payor may be an insurance company, a health maintenance organization (HMO), a preferred provider organization (PPO), a government agency or an agency such as a third-party administrator (TPA).

7.1.5.9 Pre-authorization

Refers to the process of obtaining prior approval as to the appropriateness of a service. Pre-authorization does not guarantee coverage.

7.1.5.10 Primary care provider

Indicates the provider responsible for delivering care as well as authorizing and channeling care to specialists and other providers in a gatekeeper system. The provider is also referred to as a case manager or a gatekeeper

7.1.5.11 Referral

Means a provider’s recommendation that a covered person receive care from a different provider.

7.1.5.12 Referring provider

Indicates the provider who requests services from a specialist or another primary care provider. A referring provider may, in fact, be a specialist who is referring a patient to another specialist.

7.1.5.13 Referred-to-provider

Typically indicates a specialty care provider who provides services at the request of a primary care provider or another specialty care provider.

7.1.5.14 Specialist

Means a provider of services which are beyond the capabilities or resources of the primary care provider. A specialist is also known as a specialty care provider who provides services at the request of a primary care provider or another specialty care provider.

7.1.5.15 Subscriber

Refers to a person who elects benefits and is affiliated with an employer or insurer.

7.2 Message Definitions

7.2.1 Patient Referral Message Structure (REF_I12)

The patient referral is carried in the follow in message structure.

REF^I12^REF_I2 Message Structure

```
MSH                             Message Header
RF1                             Referral Information
{PRD}                           Provider Data
PID                             Patient Identification
[PD1]                           Patient Additional Demographic
[{NK1}]                         Next of Kin/Associated Parties
[IN1]                           Insurance
[{DG1}]                         Diagnosis
[{AL1}]                         Allergy Information
[{IAM}]                         Patient Adverse Reaction Information
[{
        OBR                         Observation Request
        [{OBX}]                     Observation/Result
}]
PV1                             Patient Visit
[PV2]                           Patient Visit Additional Info
[{
    ORC                         Common Order
    [
            RXO                     Pharmacy/Treatment Order
            {RXR}                   Pharmacy/Treatment Route
            [{RXC}]                 Pharmacy/Treatment Component Order
        [{OBX}]                 Observation/Result
    ]
    [
            RXE                     Pharmacy/Treatment Encoded Order
            {RXR}                   Pharmacy/Treatment Route
            [{RXC}]                 Pharmacy/Treatment Component Order
        [{OBX}]                 Observation/Result
    ]
    [
            RXD                     Pharmacy/Treatment Dispense
            {RXR}                   Pharmacy/Treatment Route
            [{RXC}]                 Pharmacy/Treatment Component Order
    ]
    [
            {RXA}                   Pharmacy/Treatment Administration
            RXR                     Pharmacy/Treatment Route
    ]
```

```
}]
[{
    PRB                         Problem
    [VAR]                       Variance
    [
      ROL                       Role
      [VAR]                     Variance
    ]
}]
[{
    GOL                         Goal
    [VAR]                       Variance
    [
      ROL                       Role
      [VAR]                     Variance
    ]
}]
[{
    PTH                         Pathway
    [VAR]                       Variance
    [
      ROL                       Role
      [VAR]                     Variance
    ]
}]
```

Note: Australian localisation of the REF_I12 message structure is at variance from HL7 International V2.4 REF_I12 definition.

7.2.2 Patient Referral Acknowledgement Message structure (RRI_I12)

On receiving a REF^I12 message a system must produce a RRI^I12 response with the following message structure. The purpose of this message is to inform the originating referrer of the RF1-11 External Referral Identifier (EI) allocated by the receiving system.

RRI^I12^RRI_I12 Referral response Information message structure

```
MSH                             Message Header
MSA                             Message Acknowledgment
[ERR]                           Error
[
  RF1                             Referral Information
  {PRD}                           Provider Data
  PID                             Patient Identification
]
```

Receivers must not return clinical information to the originating referrer such as reports or results in the Referral Response Information (RRI).

The RF1, PID, and PRD segments must echo what was received in the referral message (REF).

Note that the RRI may contain personally identified information, therefore the handling of the message must account for the potentially sensitive nature and that RF1, PID, PRD group has been made optional for backward compatibility.

7.3 Segments

7.3.1 MSH - Message Header segment

7.3.1.0 Field definitions

Refer to 2.1.9 MSH - message header segment (see page 36).

7.3.1.9 MSH-9 Message type (CM)

Refer to 2.1.9.9 MSH-9 Message type (CM) (see page 40).

Components: <message type (ID)> ^ <trigger event (ID)> ^ <message structure (ID)>

For the patient referral message this field must be valued as:

```
REF^I12^REF_I12
```

For the referral response indication message this must be valued as

```
RRI^I12^RRI_I12
```

7.3.2 RF1 - Referral Information segment

7.3.2.0 RF1 field definitions

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	250	CE	R		0283	01137	Referral Status
2	250	CE	O		0280	01138	Referral Priority
3	250	CE	O		0281	01139	Referral Type
4	250	CE	O	Y	0282	01140	Referral Disposition
5	250	CE	O		0284	01141	Referral Category
6	250 ††	EI	R			01142	Originating Referral Identifier
7	26	TS	R †			01143	Effective Date
8	26	TS	O			01144	Expiration Date
9	26	TS	O			01145	Process Date
10	250	CE	O	Y	0336	01228	Referral Reason

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
11	250 ††	EI	O	Y		01300	External Referral Identifier

† Australian variation to HL7 V2.4.

†† RF1-6, RF1-11 have been increased length to 250 characters. Australian variation to HL7V2.4.

The RF1 segment contains the data elements that describe the nature of the referral or record transfer. The referral message has many potential uses and this segment helps clarify the purpose of the message.

7.3.2.1 RF1-1 Referral status (CE)

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the status of the referral as defined by either the referred-to or the referred by provider. Refer to User-defined Table 0283 - Referral status for allowed values in the Australian context.

User Defined Table 0283

Value	Description
A	Accepted
P	Pending
R	Rejected
E	Expired

Additional Values for use in Notifications only (i.e. RF1-3 Referral type is 'NOT')

Value	Description
I	Interim
F	Final
C	Corrected

When a corrected referral snapshot is sent, all information from the previous snapshot identified by the same RF1-6 Originating referral identifier (EI) must be replaced with the current snapshot. e.g. Allergies, Medication, Results, etc.

See section 7.6 Correcting referrals sent in error (see page 364).

7.3.2.2 RF1-2 Referral priority (CE)

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the urgency of the referral. Refer to User-defined Table 0280 - Referral priority for suggested values.

User Defined Table 0280

Value	Description
S	Stat
A	ASAP
R	Routine

7.3.2.3 RF1-3 Referral type (CE)

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>
Definition: This field contains the type of referral. It is loosely associated with a clinical specialty or type of resource. Refer to User-defined Table 0281 - Referral type for allowed values in the Australian context.

User-defined Table 0281 - Referral type

Value	Description
GRF	General referral
DRF	Discharge Referral
NOT	Notification

7.3.2.4 RF1-4 Referral disposition (CE)

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>
Definition: This field contains the type of response or action that the referring provider would like from the referred-to provider. Refer to User-defined Table 0282 - Referral disposition for allowed values in the Australian context.

User-defined Table 0282 - Referral disposition

Value	Description
WR	Send Written Report
RP	Return Patient After Evaluation
AM	Assume Management
SO	Second Opinion

Value	Description
UCP	Update Care Plan
UHR	Update Health Record
CC	Case Conference
FI	Notification - No further action
UDS	Update Decision support system

7.3.2.5 RF1-5 Referral category (CE)

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>
Definition: This field contains the location at which the referral will take place. Refer to User-defined Table 0284 - Referral category for allowed values in the Australian context.

User-defined Table 0284 - Referral category

Value	Description
I	Inpatient
O	Outpatient
A	Ambulatory
E	Emergency

7.3.2.6 RF1-6 Originating referral identifier (EI)

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>
Definition: This field contains the originating application's permanent identifier for the referral. This is a composite field.

The first component is a string that identifies an individual referral. It is assigned by the originating application, and it identifies a referral, and the subsequent referral transactions, uniquely among all such referrals from a particular processing application. This field is similar to the Filler order number in ORU messages and will uniquely identify this referral message across all organisations and the identifier is scoped but the 2nd to 4th components which must reflect the HD of the originating organisation. This may differ from the MSH Sending Application values if the message is sent on by a third party.

Note: The field length of 250 characters is a variation to the HL7 International standard which has a length of 30 characters.

7.3.2.7 RF1-7 Effective date (TS)

Definition: This field contains the date on which the referral is effective.

7.3.2.8 RF1-8 Expiration date (TS)

Definition: This field contains the date on which the referral expires.

7.3.2.9 RF1-9 Process date (TS)

Definition: This field contains the date on which the referral originated. It is used in cases of retroactive approval.

7.3.2.10 RF1-10 Referral reason (CE)

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>
Definition: This field contains the reason for which the referral will take place. Refer to User-defined Table 0336 - Referral reason for allowed values in the Australian context.

User-defined Table 0336 - Referral reason

Value	Description
S	Second Opinion
P	Patient Preference
O	Provider Ordered
W	Work Load

Note the value 'S' includes second, third and other opinions.

7.3.2.11 RF1-11 External referral identifier (EI)

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains an external application’s permanent identifier for the referral. That is, this referral identifier does not belong to the application that originated the referral and assigned the originating referral identifier.

The first component is a string that identifies an individual referral. It is typically assigned by the referred-to provider application responding to a referral originating from a referring provider application, and it identifies a referral, and the subsequent referral transactions, uniquely among all such referrals for a particular referred-to provider processing application. For example, when a primary care provider (referring provider) sends a referral to a specialist (referred-to provider), the specialist’s application system may accept the referral and assign it a new referral identifier which uniquely identifies that particular referral within the specialist’s application system. This new referral identifier would be placed in the external referral identifier field when the specialist responds to the primary care physician.

Note: The field length of 250 characters is a variation to the HL7 International standard which has a length of 30 characters.

7.3.3 PRD - Provider Data segment

7.3.3.0 PRD field definitions

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	250	CE	R	Y	0286	01155	Provider Role
2	250	XPN	C†	Y		01156	Provider Name
3	250	XAD	O	Y		01157	Provider Address
4	60	PL	O			01158	Provider Location
5	250	XTN	O	Y		01159	Provider Communication Information
6	250	CE	O		0185	00684	Preferred Method of Contact - Provider
7	100	CM	C†	Y		01162	Provider Identifiers
8	26	TS	O			01163	Effective Start Date of Provider Role
9	26	TS	O			01164	Effective End Date of Provider Role

† ALERT: Variance with HL7 2.4 International. Provider details are required in the PRD segment that is addressing a message (i.e. when PRD-1 includes an "Intended Recipient" - IR).

7.3.3.1 PRD-1 Provider role (CE) 01155

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the contact role that defines the relationship of the person described in this segment to the patient being referred. When a referral is inter-enterprise in nature, there are several important relationships that must be identified. For example, the proper identification of both the referring and the referred-to provider is critical for proper processing of a referral. In addition, some enterprises may want information regarding a consulting provider or the identity of the person who actually prepared the referral. This contact role may also expand to represent affiliated persons to whom information regarding this referral must be forwarded or copied. Refer to User-defined Table 0286 - Provider role for allowed values in the Australian context.

User-defined Table 0286- Provider role

Value	Description
RP	Referring Provider / Discharging Provider
PP	Primary Care Provider / General Provider
CP	Consulting Provider

Value	Description
RT	Referred to Provider / Discharged to provider
AP	Authoring Provider *
IR	Intended Recipient *

*Note: Australian localisation of the REF_I12 message structure is at variance from HL7 International V2.4 REF_I12 definition.

When sending a referral message to another provider, the intended recipient for the instance of that message must be identified. Only one PRD segment may be marked the intended recipient (IR) specified in the provider role field.

Note that provider role is a repeating field so a provider may have multiple roles.

There must only be one PRD with a PRD-1 value of "AP" (Authoring Provider) in the REF message. (See HL7au: 00104.1.1)

There must only be one PRD with a PRD-1 value of "IR" (Intended Recipient) in the REF message. (See HL7au: 00104.2.1)

7.3.2.2 PRD-2 Provider name (XPN) 01156

Components: In Version 2.3, replaces the PN data type. <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) > ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ <name assembly order (ID)>

Subcomponents of family name (FN): <surname (ST)> & <own surname prefix (ST)> & <own surname (ST)> & <surname prefix from partner/spouse (ST)> & <surname from partner/spouse (ST)>

Definition: This field contains the name of the provider identified in this segment. Generally, this field will describe a physician associated with the referral. However, it is not limited to physicians. This field may contain the name of any valid healthcare provider associated with this referral. If this Provider Name is a physician’s name, you may refer to PRD-7-Provider identifiers for the physician identifier.

7.3.3.3 PRD-3 Provider address (XAD) 01157

Components: In Version 2.3 and later, replaces the AD data type. <street address (SAD)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)> ^ <address validity range (DR)>

Definition: This field contains the mailing address of the provider identified in this segment. One of the key components to completing the “circle of care” and provider/institution bonding is the issuance of follow-up correspondence to the referring provider.

7.3.3.4 PRD-4 Provider location (PL) 01158

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS) & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the location of the provider as needed when a provider that may be external to a given enterprise must be referenced. For example, if this provider represented the referred-to physician, the PRD-4-Provider location must identify the clinic of the physician or provider to whom this referral has been sent. The identification of the provider's location is specified by an application and facility identifier carried in the facility field. The application ID and facility ID would be used in the same manner as their corresponding fields in the MSH segment (MSH-3-Sending application, MSH-5-Receiving application, MSH-4-Sending facility, MSH-6-Receiving facility). That is, the facility field will contain an application identifier and facility identifier which describe the location of this provider. However, it should be noted that they may describe a different location because the provider location being referenced in this field may not be the location from which the message originated, which is being described by the MSH.

7.3.3.5 PRD-5 Provider communication information (XTN) 01159

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains information, such as the phone number or electronic mail address, used to communicate with the provider or organization.

7.3.3.6 PRD-6 Preferred method of contact - provider (CE) 00684

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the preferred method to use when communicating with the provider. Refer to HL7 Table 0185 - Preferred method of contact for allowed values in the Australian context.

HL7 Table 0185 - Preferred method of contact

Value	Description
B	Beeper Number
C	Cellular Phone Number
E	E-Mail Address (for backward compatibility)
F	FAX Number
H	Home Phone Number
O	Office Phone Number

7.3.3.7 PRD-7 Provider identifiers (CM) 01162

Components: <ID number (ST)> ^ <type of ID number (IS)> ^ <other qualifying info (ST)>

Definition: This repeating field contains the provider's unique identifiers such as UPIN, Medicare and Medicaid numbers. Refer to PRA-6-Practitioner ID numbers in Chapter 8 (Section 8.6.3.6, "Practitioner ID numbers") for suggested values.

The field allows for multiple identifiers (in repeats of the field), for the same provider, but at least the first must be populated (HL7au:00104.7.0 (see page 472)). Each identifier must be a qualified provider identifier (meaning that the identifier is specific to a location or indicates what organisation the provider is part of). The field must not be populated with non-location/organisation specific identifiers such as Medicare HPI-I (see HL7au:00104.7.1.3 (see page 473)).

<ID number (ST)> is the location or organisationally scoped provider identifier and must be valued. (see HL7au:00104.7.1.2 (see page 473))

<type of ID number (IS)> must be valued from User-defined Table 0363 - Assigning Authority (see page 310). (see HL7au:00104.7.2.1 (see page 473)). Table 0363 values may be extended to allow for secure messaging vendor assigning authorities.

<other qualifying info (ST)> must be a valued from HL7 Table 0203 - Identifier Type (see page 301). (see HL7au:00104.7.3.1 (see page 473))

National identifiers must be used where available, and registered/agreed secure messaging vendor identifiers may also be used where national identifiers are unavailable. Secure messaging vendor allocated identifiers must use "VDI" as the value for <other qualifying info (ST)>.

Table 7.3.3.7.1 - Valid PRD-7 component matches

<ID number (ST)>	<type of ID number (IS)>	<other qualifying info (ST)>	Comment
049960CT	AUSHICPR	UPIN	This is an example of how to populate a Medicare provider number into PRD-7. Note that Medicare provider numbers are location specific identifiers.
8003619900015717@8003621566684455	AUSHIC	NPIO	This example shows how to indicate an individual provider within an organisation using HPI-I and HPI-O identifiers.
8003621566684455	AUSHIC	NOI	This is an example showing how to indicate a referral to a HealthCare Service (rather than an individual provider). The HPI-O alone is placed into the PRD-1 <ID number (ST)>.
Examples below are for vendor allocated identifiers:			
JD455600041	Medical-Objects	VDI	VDI may represent either an individual or a group organisation see HL7 Table 0203 - Identifier Type (see page 301).
X0012345	Argus	VDI	Individual provider Argus issued identifier
ACC3456700000000	Argus	VDI	Site or service identifier issued by Argus

For an <type of ID number (IS)> the appropriate matching <type of ID number (IS)> and <other qualifying info (ST)> must be used. The table above shows this mapping.

7.3.3.8 PRD-8 Effective start date of provider role (TS) 01163

Definition: This field contains the date that the role of the provider effectively began. For example, this date may represent the date on which a physician was assigned as a patient's primary care provider.

7.3.3.9 PRD-9 Effective end date of provider role (TS) 01164

Definition: This field contains the date that the role of the provider effectively ended. For example, this date may represent the date that a physician was removed as a patient's primary care provider.

Note: The PRD-8-Effective start date of role and PRD-9-Effective end date of role fields should not be used as trigger events. For example, they should not be used to trigger a change in role. These two dates are for informational purposes only.

7.3.4 PID - Patient Identification segment

Refer to 2.2.1 PID - patient identification segment (see page 58)

7.3.5 PD1 - patient additional demographic segment

Refer to HL7 Standard Version 2.4 section 3.4.10 PD1 - PATIENT ADDITIONAL DEMOGRAPHIC SEGMENT page 3-120 .

7.3.6 NK1 - Next of kin / associated parties segment

Refer to HL7 Standard Version 2.4 section 3.4.5 NK1 - NEXT OF KIN / ASSOCIATED PARTIES SEGMENT page 3-102.

7.3.7 IN1 - Insurance segment

Refer to HL7 Standard Version 2.4 section 6.5.6 IN1 – INSURANCE SEGMENT page 6-43.

7.3.8 DG1 - Diagnosis segment

Refer to HL7 Standard Version 2.4 section 6.5.2 DG1 – DIAGNOSIS SEGMENT page 6-21.

7.3.9 AL1 - Patient allergy information segment

Refer to 2.2.4 AL1 - Patient allergy information segment (see page 107).

7.3.10 IAM - Patient adverse reaction information segment

The IAM segment contains person/patient adverse reaction information of various types. Most of this information will be derived from user-defined tables. Each IAM segment describes a single person/patient adverse reaction. This segment is used in lieu of the AL1 - Patient allergy information segment to support
action code/unique identifier mode update definition of repeating segments as defined in 2.14.4.2. The AL1 segment is used to support Snapshot mode update definition as defined in 2.14.4.1.

HL7 Attribute Table – IAM – Patient adverse reaction information – unique identifier

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			01612	Set ID – IAM
2	250	CE	O		0127 (see page 108)	00204	Allergen Type Code
3	250	CE	R			00205	Allergen Code/Mnemonic/Description
4	250	CE	O		0128 (see page 109)	00206	Allergy Severity Code
5	15	ST	O	Y		00207	Allergy Reaction Code
6	250	CNE	R		0323	01551	Allergy Action Code
7	80	EI	R			01552	Allergy Unique Identifier
8	60	ST	O			01553	Action Reason
9	250	CE	O		0436	01554	Sensitivity to Causative Agent Code
10	250	CE	O			01555	Allergen Group Code/Mnemonic/Description
11	8	DT	O			01556	Onset Date
12	60	ST	O			01557	Onset Date Text
13	8	TS	O			01558	Reported Date/Time
14	250	XPN	O			01559	Reported By
15	250	CE	O		0063	01560	Relationship to Patient Code
16	250	CE	O		0437	01561	Alert Device Code
17	250	CE	O		0438	01562	Allergy Clinical Status Code
18	250	XCN	O			01563	Statused by Person
19	250	XON	O			01564	Statused by Organization
20	8	TS	O			01565	Statused at Date/Time

7.3.10.0 IAM field definitions

7.3.10.1 IAM-1 Set ID - IAM (SI) 01612

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

7.3.10.2 IAM-2 Allergen type code (CE) 00204

Definition: This field indicates a general allergy category (drug, food, pollen, etc.). Refer to User-defined

Table 0127 - Allergen type for suggested values.

Value	Description

7.3.10.3 IAM-3 Allergen code/mnemonic/description (CE) 00205

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field uniquely identifies a particular allergen. This element may conform to some external, standard coding system (that must be identified), or it may conform to local, largely textual or mnemonic descriptions.

If a system maintains allergen codes as it's unique identifier for a particular allergy, and two systems have agreed to process the IAM using update mode, then this field can be used as the unique identifier instead of IAM-8 - Allergy Unique Identifier. This does not preclude using allergen codes for unique identifiers for snapshot processing.

7.3.10.4 IAM-4 Allergy severity code (CE) 00206

Definition: This field indicates the general severity of the allergy. Refer to User-defined Table 0128 - Allergy severity code for suggested values.

7.3.10.5 IAM-5 Allergy reaction code (ST) 00207

Definition: This field identifies the specific allergic reaction that was documented. This element may conform to

some external, standard coding system, or it may conform to a local, largely textual or mnemonic descriptions (e.g., convulsions, sneeze, rash, etc.).

7.3.10.6 IAM-6 Allergy action code (CNE) 01551

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST)>

Definition: This field contains a code defining the status of the record. It allows allergy messages to be sent to delete or update previously sent allergy messages. Refer to HL7 Table 0323 - Action code for suggested values.

HL7 Table 0323 - Action code

Value	Description
A	Add/Insert
D	Delete
U	Update

7.3.10.7 IAM-7 Allergy unique identifier (EI) 01552

Components: <entity identifier (ST)> ^ <assigning authority (HD)> Subcomponents of assigning authority: <application identifier 1 (IS)> & <universal identifier (UI)>

Definition: This field contains a value that uniquely identifies a single allergy for a person. It is unique across all segments and messages for a person. If a system maintains allergen codes as a unique identifier for a particular allergy, then this field should not be used.

This field is conditionally required. The surrogate field to use is IAM-3 - Allergen Code/Mnemonic/Description, if that field can uniquely identify the allergy on the receiving system.

7.3.10.8 IAM-8 Action reason (ST) 01553

Definition: This field contains the reason for the action indicated in the IAM-6 - Allergy action code field.

7.3.10.9 IAM-9 Sensitivity to Causative Agent code (CE) 01554

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the reason why the patient should not be exposed to a substance. Refer to User-defined Table 0436 - Sensitivity to causative Agent code for suggested values.

User-defined Table 0436 - Sensitivity to Causative Agent code

Value	Description
AD	Adverse Reaction (Not otherwise classified)
AL	Allergy
CT	Contraindication
IN	Intolerance

7.3.10.10 IAM-10 Allergen group code/mnemonic/description (CE) 01555

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the code, mnemonic, or description used to uniquely identify an allergen group when both a detailed allergy (IAM-3) and group level (IAM-11) need to be communicated. In cases where systems want to communicate both a specific drug allergy and the group of drugs to which the specific drug belongs (i.e., Bactrim and Sulfa drugs; Ceclor and Penicillins/Cephalosporins) then the specific drug allergy is sent in IAM-3 and the group level is sent in IAM-11. However, if only a group level is being communicated, then it can be sent in IAM-3 as the primary identifier of the allergy.

7.3.10.11 IAM-11 Onset date (DT) 01556

Definition: This field contains the actual date of the first reaction.

7.3.10.12 IAM-12 Onset date text (ST) 01557

Definition: This field contains a text description of the time period of the first reaction when an exact date is not known. (e.g., adolescence, childhood, spring 1990).

7.3.10.13 IAM-13 Reported date/time (TS) 01558

Definition: This field contains the date/time the allergy was reported to a caregiver.

7.3.10.14 IAM-14 Reported by (XPN) 01559

Components: In Version 2.3, replaces the PN data type. <family name (FN)> ^ <given name (ST)> ^ <second and further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) > ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ <name assembly order (ID)>

Subcomponents of family name: <family name (ST)> & <own family name prefix (ST)> & <own family name (ST)> & <family name prefix from partner/spouse (ST)> & <family name from partner/spouse (ST)>

Definition: This field contains the name of the person reporting the allergy to a caregiver at the time reported in IAM-14 - reported date/time.

7.3.10.15 IAM-15 Relationship to patient code (CE) 01560

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the personal relationship that the person reporting the allergy has to the patient. It uses the same table as that used by NK1-3. Refer to User-defined Table 0063 - Relationship for suggested values. Examples include: brother, sister, mother, father, friend, spouse, etc.

7.3.10.16 IAM-16 Alert device code (CE) 01561

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field describes any type of allergy alert device the patient may be carrying or wearing.

Refer to User-defined Table 0437 - Alert device for suggested values.

User-defined Table 0437 - Alert device code

Value	Description
B	Bracelet
N	Necklace

Value	Description
W	Wallet Card

7.3.10.17 IAM-17 Allergy clinical status code (CE) 01562

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates the verification status for the allergy. Refer to User-defined Table 0438 - Allergy clinical status for suggested values.

User-defined Table 0438 - Allergy clinical status

Value	Description
U	Unconfirmed
P	Pending
S	Suspect
C	Confirmed or verified
I	Confirmed but inactive
E	Erroneous
D	Doubt raised

7.3.10.18 IAM-18 Statused by person (XCN) 01563

Components: <ID number (ST)> ^ <family name (ST) > & < last_name_prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ < name representation code(ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the provider who assigned the clinical status to the allergy. (e.g. ...| Smith^John^J^III^DR^MD|...).

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

7.3.10.19 IAM-19 Statused by organization (XON) 01564

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code(ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the organization providing the update to the allergy (e.g. General Hospital).

7.3.10.20 IAM-20 Statused at date/time (TS) 01565

Definition: The date and time that this allergy was last statused by the IAM-19 - Statused by person in the IAM-20 - Statused by organization.

7.3.11 ORC - Common Order segment

Refer to 5.4.1 ORC - common order segment (see page 281).

The following subsections provide extra detail for use in the context of a patient referral message.

7.3.11.1 ORC-1 Order control (ID) 00215

HL7 Table 0119 - Order control codes applicable to REF^I12

Value[1]	Event/ Message Type	Description	Originator[2]	Field Note[3]
RE	REF^I12	Observations Performed		

The above table is a subset of HL7 Table 0119 (see page 404) which apply only to the patient referral message.

7.3.11.7 ORC-7 Quantity/timing (TQ) 00221

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Refer to 5.4.1.7 ORC-7 Quantity/timing (TQ) 00221 (see page 294).

<quantity CQ> component should indicate the dosing quantity. Refer to 3.25 TQ - timing quantity (see page 173)

<interval (CM)> component should indicate the dosing interval. Refer to 3.25.2 Interval component (CM) (see page 174)

7.3.11.9 ORC-9 Date/time of transaction (TS) 00223

This is the date/time that the medication was recorded in the application. Refer also to ORC-15-order effective data/time.

7.3.11.12 ORC-12 Ordering provider (XCN) 00226

This field identifies the practitioner who prescribed the medication if known. If a medication history was taken but the prescribing practitioner was not recorded then it should be left unvalued.

Components: <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

<ID number (ST)> component should be either the prescriber number or a in the case of a prescribing pharmacist their pharmacy board registration number, or a Medicare provider number or HPI-I, or if patient self prescribed valued as 'SELFPRESC'.

<family name (FN)> component must be the prescriber's surname

<given name (ST)> component must be the prescriber's first name

<second or further given names or initials thereof (ST)> component should be valued by the prescriber's initials if known

<prefix (e.g., DR) (ST)> component should be valued as the prescribers title eg. Dr

<degree (e.g., MD) (IS)> component should be the prescribers qualifications if known

<assigning authority (HD)> component must be valued as:

'AUSHIC' if a Medicare prescriber is valued in <ID number (ST)>

'AUSHICPR' if a Medicare provider number is valued in <ID number (ST)>

'<STATE>PB' if a Pharmacy board registration number is valued in <ID number (ST)>. eg. NSWPB, QLDPB, etc

'L' if <ID number (ST)> is 'SELFPRESC'

<identifier type code (IS)> component must be valued as:

'PRES' if <ID number (ST)> is a prescriber number

'PHARM' if <ID number (ST)> is a pharmacy board registration number.

'SELFPRESC' if <ID number (ST)> is 'SELFPRESC'. This means that the patient has self prescribed.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

7.3.11.13 ORC-13 Enterer's location (PL) 00227

Note for the ordering provider's location use ORC-21 to ORC-24.

Refer to 5.4.1.13 ORC-13 Enterer's location (PL) 00227 (see page 296)

7.3.11.15 ORC-15 Order effective date/time (TS) 00229

Refer to 5.4.1.15 ORC-15 Order effective date/time (TS) 00229 (see page 297)

This field should be valued with the date and time that the prescriber certified or signed by the prescription. If unknown leave blank.

7.3.11.24 ORC-24 Ordering provider address (XAD) 01314

This field should not be used. Use ORC-22 for the address of the prescriber's facility.

7.3.12 OBR - Observation Request segment

Refer to 4.4.1 OBR – Observation Request Segment (see page 206).

7.3.13 OBX - Observation/Result segment

Refer to 4.4.2 OBX - Observation/Result segment (see page 235).

7.3.14 PV1 - Patient Visit segment

Refer to 2.2.2 PV1 - patient visit segment (see page 72).

7.3.15 PV2 - Patient visit - additional information segment

Refer to 2.2.3 PV2 - patient visit - additional information segment (see page 94).

7.3.16 RXO - pharmacy/treatment order segment

This is the “master” pharmacy/treatment order segment. It contains order data not specific to components or additives. Unlike the OBR, it does not contain status fields or other data that are results-only.

It can be used for any type of pharmacy order, including inpatient (unit dose and compound unit dose), out patient, IVs, and hyperalimentation IVs (nutritional IVs), as well as other nonpharmacy treatments, e.g., respiratory therapy, oxygen, and many nursing treatments.

In addition to the pharmaceutical/treatment information, this segment contains additional data such as provider and text comments.

A quantity/timing field is not needed in the RXO segment. The ORC segment contains the requested ORC-7-quantity/timing of the original order which does not change as the order is encoded, dispensed, or administered.

7.3.16.0 RXO field definitions

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	250	CE	C			00292	Requested Give Code
2	20	NM	C			00293	Requested Give Amount - Minimum

3	20	NM	O			00294	Requested Give Amount - Maximum
4	250	CE	C			00295	Requested Give Units
5	250	CE	C			00296	Requested Dosage Form
6	250	CE	O	Y		00297	Provider’s Pharmacy/Treatment Instructions
7	250	CE	O	Y		00298	Provider’s Administration Instructions
8	200	CM	O			00299	Deliver-To Location
9	1	ID	O		0161	00300	Allow Substitutions
10	250	CE	O			00301	Requested Dispense Code
11	20	NM	O			00302	Requested Dispense Amount
12	250	CE	O			00303	Requested Dispense Units
13	3	NM	O			00304	Number Of Repeats
14	250	XCN	C	Y		00305	Ordering Provider’s DEA Number
15	250	XCN	C	Y		00306	Pharmacist/Treatment Supplier’s Verifier ID
16	1	ID	O		0136	00307	Needs Human Review
17	20	ST	C			00308	Requested Give Per (Time Unit)
18	20	NM	O			01121	Requested Give Strength
19	250	CE	O			01122	Requested Give Strength Units
20	250	CE	O	Y		01123	Indication
21	6	ST	O			01218	Requested Give Rate Amount
22	250	CE	O			01219	Requested Give Rate Units
23	10	CQ	O			00329	Total Daily Dose
24	250	CE	O	Y		01476	Supplementary Code

7.3.16.1 RXO-1 Requested give code (CE) 00292

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the treatment product or treatment ordered to be given to the patient; it is analogous to OBR-4-universal service ID in function. Examples of treatments products include medications and certain devices or supplies, e.g., inhaler spacers, blood glucose monitors, syringes, infusion sets, which might require prescription.

Often the coded entry implies dosage form and a dosage form is required in addition to the product name. When the give code does not include the dosage form, use RXO-5-requested dosage form. When the give code does not include the strength, use RXO-18-requested give strength and the RXO-19-requested give units Realize that strengths do not apply to some such orders.

The RXO-1, RXO-2 and RXO-4 are mandatory unless the prescription/treatment is transmitted as free text using RXO-6, then RXO-1, RXO-2, and RXO-4 may be blank and the first subcomponent of RXO-6 must be blank.

Use of the RXO-6.2 versus the RXO-1.2 for a free text order is dependent on whether or not the free text describes a product or if it is more commentary in nature.

Please refer to the request –to-dispense fields RXO-10, RXO-11, and RXO-12 for a discussion of the inter relationship with the request-to-give fields.

Usage notes:

<identifier (ST)> component should be the code number

For Australian Medicines Terminology (AMT)

For MIMS trade products packs (TPP) codes construct should be constructed as per the description of the code system name "mims-codes" as defined in the HL7 OID registry: http://www.hl7.org/oid/index.cfm?Comp_OID=1.2.36.1.2001.1005.11.1

1. The mims-codes format is a triplet of between 5 and 9 digits, comprising of all the following in order:

1. Product code: 1 to 5 digits
2. Form code: 2 digits (padded with leading 0 if <10)
3. Pack code: 2 digits (padding with leading 0 if <10)

eg. 12930102^Pulmicort 200 mcg/ dose Turbuhaler 200 dose^mims-codes

<text (ST)> component should be the product's trade name should always be transmitted along with the code.

<name of coding system (IS)> component should be 'EAN' or 'mims-codes' or 'AMT' appropriate to the <identifier (ST)> component.

<alternate identifier (ST)> component should be a code from an Australian medication coding system

<alternate text (ST)> component should be an Australian drug brand or generic name, if available.

<name of alternate coding system (IS)> component should be a recognised coding system such as 'mims-codes', 'AMT'

Where AMT codes are available for a product, they should be sent in the Alternative code components of the CE field.

Additional MIMS notes (informative):

- For MIMS decision support, it's recommended to use the VirtualEntities mapping file to map MIMS pack code to the FastTrack GUID. This file is included in MIMS monthly updates.
- MIMS ASCII data model has no analog for the AMT MPP concepts.
- There are some stability concerns with use of MIMS codes:
    a. MIMS pack codes are not guaranteed to be 100% immutable.
    b. Product code may change when the manufacturer elects to split the brand by formulation. In such cases, the old code will be marked as 'off-market' and new codes being issued.
    c. Form code and pack codes are currently 2 digits each. In the event, that more than 99 packs have to be created due to the PBS changes, a new form will be created. The old packs will be marked as 'off market'. This could introduce an issue when trying to re-prescribe a pack.

7.3.16.2 RXO-2 Requested give amount - minimum (NM) 00293

Definition: This field is the ordered amount. In a variable dose order, this is the minimum ordered amount. In a non-varying dose order, this is the exact amount of the order.

The RXO-1, RXO-2 and RXO-4 are mandatory unless the prescription/treatment is transmitted as free text using RXO-6, then RXO-1, RXO-2, and RXO-4 may be blank and the first subcomponent of RXO-6 must be blank.

Note: This field is not a duplication of the first component of the quantity/timing field, since in non-pharmacy/ treatment orders, that component can be used to specify multiples of an ordered amount.
Another way to say this is that, for pharmacy/treatment orders, the quantity component of the quantity/timing field refers to what is to be given out at each service interval; thus, in terms of the RX order, that first component always defaults to 1. Hence, in the actual execution of the order, the value of 1 in the first component of the quantity/ timing field always refers to one administration of the amount specified in this field (the Requested Give Amount field).

Usage notes:

Ensure RXO-4 is valued if this field is valued.

7.3.16.3 RXO-3 Requested give amount - maximum (NM) 00294

Definition: In a variable dose order, this is the maximum ordered amount. In a non-varying dose order, this field is not used.

7.3.16.4 RXO-4 Requested give units (CE) 00295

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates the units for the give amount.

The RXO-1, RXO-2 and RXO-4 are mandatory unless the prescription is transmitted as free text using RXO-6, then RXO-1, RXO-2, and RXO-4 may be blank and the first subcomponent of RXO-6 must be
blank.

Note: These units can be a “compound quantity”; i.e., the units may contain the word “per.” For example, micrograms per KG (micg/kg) is an acceptable value, which means that the units are micrograms per KG (of body weight).

A table of standard units is needed to define standard abbreviations for compound units. Until such a table is agreed on, a user-defined table is needed for each site. If the interpretation of a compound unit requires knowledge of some observation results (such as body weight or height), these results can be sent in the
same order message using the optional OBX segments.

Usage notes:

Ensure RXO-2 is valued if this field is valued.

<identifier (ST)> component must be valued with the units provided by drug information database, such as MIMS. TGA and UCUM may units may be used if no drug database is used.

<text (ST)> component must be valued with a suitable display representation as provided by the system drug database

<name of coding system (IS)> component must be valued to indicate the units of measurement code system used in <identifier (ST)>. For MIMS, use "MIMS-UNITS".

<alternate identifier (ST)> component should be valued with the units of an alternate code system such as TGA or UCUM where available.

<alternate text (ST)> component should be valued with the units of an alternate display text from system such as TGA or UCUM appropriate for the <alternate identifier (ST)>.

<name of alternate coding system (IS)> component should be valued with the units of

UCUM units are available at unitsofmeasure.org[97]

The TGA units can be obtained from the following web site:

https://www.ebs.tga.gov.au/ and select Public TGA information/Code Tables/Units of Proportion

TGA does not permit the abbreviation of microgram as 'mcg' to avoid ambiguity.

TGA permits the abbreviation IU, however this could be a safety risk and the full term 'international units' or 'units' should be used.

Compound unit dosing is unsupported (e.g. mg per kg body weight) .

7.3.16.5 RXO-5 Requested dosage form (CE) 00296

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates the manner in which the treatment is aggregated for dispensing, e.g., tab lets, capsules suppositories. In some cases, this information is implied by the dispense/give code in RXO-1-requested give code or RXO-10-Requested dispense code. Required when both RXO-1-Requested give code and RXO-10-Requested dispense code do not specify the drug/treatment form. Optionally included otherwise.

<identifier (ST)> component should be the products trade name dose form code

<text (ST)> component should be the products trade name dose form text for the user to see

<name of coding system (IS)> component should be the code system from which the trade name for code belongs.

For MIMS, use "MIMS-FORM".

<alternate identifier (ST)> component should be the TGA

<alternate text (ST)> component should be the TGA approved dosage form name

<name of alternate coding system (IS)> should be TGAAAN

TGA dosage form <alternate identifier (ST)> values are available at the following web site:

https://www.tga.gov.au/other-terminology-describe-medicines#dosage

7.3.16.6 RXO-6 Provider’s pharmacy/treatment instructions (CE) 00297

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the ordering provider’s instructions to the pharmacy or the non-pharmacy treatment provider (e.g., respiratory therapy). If coded, a user-defined table must be used. If transmitted as a free text field, place a null in the first component and the text in the second, e.g., |^this is a free text treatment instruction|. If the prescription is transmitted as free text using RXO-6, then RXO-1, RXO-2, and RXO-4 may be blank and the first subcomponent of RXO-6 must be blank. Otherwise, RXO-1, RXO-2 and RXO-4 are mandatory.

Usage: This field need not be used in patient referral.

If the field is used,

the <identifier (ST)> component should be left blank,

97 http://unitsofmeasure.org/

and the <text (ST)> component should contain additional instructions that were provided to the dispenser when the medication was prescribed.

For example "

Reg 24
Minimum dispensing interval

the <name of coding system (IS)> should be blank

7.3.16.7 RXO-7 Provider's administration instructions (CE) 00298

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the ordering provider's instructions to the patient or to the provider administering the drug or treatment. If coded, a user-defined table must be used. If transmitted as free text, place a null in the first component and the text in the second, e.g., |^this is a free text administration instruction|.

Usage: <text (ST)> should be the free text representation of medication directions.

NB. Written words should be used in place of fractions and numbers. Plain English should be used in place of abbreviations.

an example of <text (ST)>:

take HALF a tablet twice a day HALF an hour before food

NB. TQ1 should be used for numeric representation of dosing quantity and interval.

7.3.16.8 RXO-8 Deliver-to location (CM) 00299

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <address (AD)>

Subcomponents of facility (HD): <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of address (AD): <street address (ST)> & < other designation (ST)> & <city (ST)> & <state or province (ST)> & <zip or postal code (ST)> & <country (ID)> & <address type (ID)> & <other geographic designation (ST)>

Definition: The first components, modeled after the PL data type, contain the inpatient or outpatient location to which the pharmacy provider or treatment supplier is to deliver the drug or treatment device (if applicable). The default (null) value is the current census location for the patient. This component has the same form as PV1-3-assigned patient location. The last component can be used to specify an address.

This could be used to fill mail orders to a patient or provider, or to account for home health care.

7.3.16.9 RXO-9 Allow substitutions (ID) 00300

Definition: Following are the values:

HL7 Table 0161 - Allow substitution

Value	Description
N	Substitutions are NOT authorized.
G	Allow generic substitutions.
T	Allow therapeutic substitutions

Usage:

In the context of patient referral this field should be populated with a value indicating what type of substitutions were allowed when the medication was prescribed.

If this is unknown the field should be left blank.

If the field is blank receivers of the message should consider it possible that substitutions could have been made.

7.3.16.10 RXO-10 Requested dispense code (CE) 00301

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field indicates what is to be/was dispensed; it is analogous to OBR-4-universal service ID in function. It may be present in the order or not, depending on the application. If not present, and values are given for RXO-11-requested dispense amount and RXO-12-requested dispense units, the RXO-1- requested give code is assumed. If the requested dispense code does not include the dosage form, then RXO-5-requested dosage form is required

Note on request-to-dispense fields:
Sometimes an order will be written in which the total amount of the drug or treatment requested to be dispensed has no direct relationship with the give amounts and schedule. For example, an outpatient pharmacy/treatment order might be take four tablets a day of <drug name, value>, Q6H (every 6 hours) -- dispense 30 tablets. An inpatient order might be NS/D5W (normal saline with 5% dextrose) at 1000cc/hour—dispense 3 1-litre bottles of NSD5W solution. The request-to-dispense fields support this common style of ordering.

7.3.16.11 RXO-11 Requested dispense amount (NM) 00302

Definition: This field specifies the amount to be dispensed. See above note.

7.3.16.12 RXO-12 Requested dispense units (CE) 00303

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the units for the dispense amount. This must be in simple units that reflect the actual quantity of the substance to be dispensed. It does not include compound units. See above note.

7.3.16.13 RXO-13 Number of Repeats (NM) 00304

Definition: This field defines the number of times the requested dispense amount can be given to the patient, subject to local regulation. Refers to outpatient only.

Usage:

This field is optional for patient referral, but may be populated with information used when the medication was prescribed.

NB: The name of this field is changed to use the word repeat instead of the word "refill" which is an American term.

Note that hand written or printed scripts are not written this way, by convention, scripts are written with the number of repeats in addition to the initial dispense (repeats are one less than the total number to be dispensed).

7.3.16.14 RXO-14 Ordering provider's DEA number (XCN) 00305

Components: In Version 2.3 and later, use instead of the CN data type. <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Definition: This field identifies the provider's controlled substance number, if required, by site. It is defined as conditional because it is required when the substance being requested is a controlled substance (e.g., a narcotic).

Usage:

This field is not relevant for patient referral.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

7.3.16.15 RXO-15 Pharmacist/treatment supplier's verifier ID (XCN) 00306

Components: In Version 2.3 and later, use instead of the CN data type. <ID number (ST)> ^ <family name (FN)> ^ <given name (ST)> ^ <second or further given names or initials thereof (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)> ^ <name context (CE)> ^ <name validity range (DR)> ^ < name assembly order (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)

Definition: This field is the provider ID of the pharmacist/treatment supplier verifier. Use if required by the pharmacy or treatment application or site on orders (or some subgroup of orders), in addition to ORC- 11-verified by.

Example:

The site requires a “verified by” provider (such as a nurse) and a “verifying pharmacist/treatment supplier” on the order. In this case the first field, ORC-11-verified by, is already present; but the second field, RXO-15-pharmacist/ treatment supplier’s verifier ID, is needed.

Usage:

This field is not required for patient referral.

In the Australian context, where possible, this XCN data must be populated using the method described in A10.1.2.1 XCN Datatype (see page 530).

7.3.16.16 RXO-16 Needs human review (ID) 00307

Definition: This field uses HL7 table 0136 - Yes/no indicator. The values have the following meaning for this field:

Y Yes - Indicates that the pharmacist or non-pharmacist treatment supplier filling the order needs to pay special attention to the text in the RXO-6-provider’s pharmacy/treatment instructions. A warning is present.

N No - No warning is present. This is the equivalent default (null) value.

An example of the use of this field is given by the following case:

A smart Order Entry application knows of a possible drug or treatment interaction on a certain order, but the provider issuing the order wants to override the condition. In this case, the pharmacy or treatment application receiving the order will want to have a staff pharmacist or non-pharmacist treatment supplier review the interaction and contact the ordering physician.

Usage:

This field is not required for patient referral.

7.3.16.17 RXO-17 Requested give per (time unit) (ST) 00308

Definition: This field identifies the time unit to use to calculate the rate at which the pharmaceutical is to be administered.

Format:
S<integer> = <integer> seconds
M<integer> = <integer> minutes
H<integer> = <integer> hours
D<integer> = <integer> days
W<integer> = <integer> weeks
L<integer> = <integer> months

Note: This is the same as the format specified for the DURATION component of the quantity/timing field, excluding the“X” specification.

This field is defined as conditional because it is required when the ordered substance is to be administered continuously at a prescribed rate (e.g., certain IVs). For example, if the “give amount/units” are 300 ml and the “give per” time unit is H1, the rate is 300ml/hr and the duration of this dose is 1 hour. Thus the give amount and give per time unit define the duration of the service.

This field is distinct from the “interval” component of the quantity/timing field, but it could be used in conjunction with it, as in give 300ml of NS per hr for 1 hour, repeat twice a day.

7.3.16.18 RXO-18 Requested give strength (NM) 01121

Definition: Required when RXO-1-requested give code does not specify the strength. Optionally included otherwise. This is the numeric part of the strength, used in combination with RXO-19-requested give strength units.

The need for strength and strength unit fields in addition to the amount and amount units fields included in various RX_ segments requires explanation. Physicians can write a prescription for a drug such as Ampicillin in two ways. One way would be: “Ampicillin 250 mg capsules, 2 capsules four times a day.” In this case the give amount would be 2, the give units would be capsules, the strength would be 250 and the strength units would milligrams.

However, the provider could also write the pharmaceutical treatment as “Ampicillin 500 mg four times a day.” In this case the give amount would be 500 and the give units would be milligrams. The strength would not be reported in the RXO segment because it is not specified; the drug could be given in two 250 mg caps or one 500 mg cap. But the pharmacist would dispense a specific capsule size and would record the strength in the RXE segment as 250 or 500, depending upon which capsule size was dispensed.

Some coding systems imply the strength, units, route of administration, and manufacturer of substances within a single instructional code. NDC codes, for example, usually imply not only the medical substance, but also the strength, the units, and the form, e.g., 0047-0402-30^Ampicillin 250 MG CAPS^NDC. So all of this information can also be completely specified in RXO-1-requested give code and in the analogous CE fields in other pharmacy/ treatment segments. In this case, it is not necessary to use the strength and strength units fields to specify this information.

7.3.16.19 RXO-19 Requested give strength units (CE) 01122

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: Required when both RXO-1-requested give code and RXO-10-requested dispense code do not specify the strength. Optionally included otherwise. This is the unit of the strength, used in combination with RXO-18-requested give strength.

Note: These units can be a “compound quantity;” i.e., the units may express a quantity per unit of time. For example, micrograms per hour (mg/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

Refer to 7 Patient Referral (see page 347) for instructions on how to use this field.

7.3.16.20 RXO-20 Indication (CE) 01123

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

7.3.16.21 RXO-21 Requested give rate amount (ST) 01218

Definition: This field contains the rate at which to administer a treatment, e.g., 150 ml/hr (for an IV) or 4 liters/min for nasal oxygen.

7.3.16.22 RXO-22 Requested give rate units (CE) 01219

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the units in which RXO-21-requested give rate amount is denominated.

Refer to RXO-4 (see page 315) for instructions on how to use this field.

7.3.16.23 RXO-23 Total daily dose (CQ) 00329

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <text (ST)> & <name of coding system (IS)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (IS)>

Definition: This field contains the total daily dose for this particular pharmaceutical as expressed in terms of actual dispense units.

7.3.16.24 RXO-24 Supplementary code (CE) 01476

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

This field accommodates the identification of any codes that might be associated with the pharmaceutical substance. Common codes include: the Generic Product Identifier (GPI), Generic Code Number_Sequence Number (GCN_SEQNO), National Drug Code (NDC).

7.3.17 RXR - Pharmacy/treatment route segment

The Pharmacy/Treatment Route segment contains the alternative combination of route, site, administration device, and administration method that are prescribed as they apply to a particular order. The pharmacy, treatment staff and/or nursing staff has a choice between the routes based on either their professional judgment or administration instructions provided by the physician.

7.3.17.0 RXR field definitions

HL7 Attribute Table – RXR – Pharmacy/Treatment Route

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	250	CE	R		0162	00309	Route
2	250	CE	O		0163 (see page 221)	00310	Administration Site
3	250	CE	O		0164	00311	Administration Device
4	250	CE	O		0165	00312	Administration Method
5	250	CE	O			01315	Routing Instruction

7.3.17.1 RXR-1 Route (CE) 00309

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field is the route of administration.

Some current “route codes,” such as some of the NDC-derived codes include the site already. In such cases, the entire code can be included in this field as a “locally-defined code” for the CE data type. Refer to HL7 Table 0162 - Route of administration for valid values.

HL7 Table 0162 - Route of administration

Value	Description
AP	Apply Externally
B	Buccal
DT	Dental
EP	Epidural
ET	Endotrachial Tube*
GTT	Gastrostomy Tube
GU	GU Irrigant
IMR	Immerse (Soak) Body Part
IA	Intra-arterial
IB	Intrabursal
IC	Intracardiac
ICV	Intracervical (uterus)
ID	Intradermal
IH	Inhalation
IHA	Intrahepatic Artery
IM	Intramuscular
IN	Intranasal
IO	Intraocular
IP	Intraperitoneal

Value	Description
IS	Intrasynovial
IT	Intrathecal
IU	Intrauterine
IV	Intravenous
MTH	Mouth/Throat
MM	Mucous Membrane
NS	Nasal
NG	Nasogastric
NP	Nasal Prongs*
NT	Nasotrachial Tube
OP	Ophthalmic
OT	Otic
OTH	Other/Miscellaneous
PF	Perfusion
PO	Oral
PR	Rectal
RM	Rebreather Mask*
SD	Soaked Dressing
SC	Subcutaneous
SL	Sublingual
TP	Topical
TRA	Tracheostomy*
TD	Transdermal
TL	Translingual
UR	Urethral
VG	Vaginal

Value	Description
VM	Ventimask
WND	Wound

*used primarily for respiratory therapy and anesthesia delivery

7.3.17.2 RXR-2 Administration site (CE) 00310

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the site of the administration route. Refer to HL7 Table 0163 – Body Site for valid values.

As a CE data type, this field may be extended to cover a wide variety of body site codes (e.g., when SNOMED is used as the table source).

7.3.17.3 RXR-3 Administration device (CE) 00311

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field contains the mechanical device used to aid in the administration of the drug or other treatment. Common examples are IV-sets of different types. Refer to HL7 Table 0164 - Administration device for valid entries.

HL7 Table 0164 - Administration device

Value	Description
AP	Applicator
BT	Buretrol
HL	Heparin Lock
IPPB	IPPB
IVP	IV Pump
IVS	IV Soluset
MI	Metered Inhaler
NEB	Nebulizer
PCA	PCA Pump

7.3.17.4 RXR-4 Administration method (CE) 00312

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the specific method requested for the administration of the drug or treatment to the patient. Refer to HL7 Table 0165 - Administration method for valid values.

HL7 Table 0165 - Administration method

Value	Description
CH	Chew
DI	Dissolve
DU	Dust
IF	Infiltrate
IS	Insert
IR	Irrigate
IVPB	IV Piggyback
IVP	IV Push
NB	Nebulized
PT	Paint
PF	Perfuse
SH	Shampoo
SO	Soak
SW	Swallow or Take
WA	Wash
WI	Wipe

7.3.17.5 RXR-5 Routing instruction (CE) 01315

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field provides instruction on administration routing, especially in cases where more than one route of administration is possible. A typical case would be designating which IV line should be used when more than one IV line is a possible route for injection.

7.3.18 RXC - Pharmacy/treatment component order segment

If the drug or treatment ordered with the RXO segment is a compound drug OR an IV solution, AND there is not a coded value for OBR-4-universal service ID, which specifies the components (base and all additives), then the components (the base and additives) are specified by two or more RXC segments. The policy of the pharmacy or treatment application on substitutions at the RXC level is identical to that for the RXO level.

7.3.18.0 RXC field definitions

HL7 Attribute Table – RXC – Pharmacy/Treatment Component Order

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	1	ID	R		0166	00313	RX Component Type
2	250	CE	R			00314	Component Code
3	20	NM	R			00315	Component Amount
4	250	CE	R			00316	Component Units
5	20	NM	O			01124	Component Strength
6	250	CE	O			01125	Component Strength Units
7	250	CE	O	Y		01476	Supplementary Code

7.3.18.1 RXC-1 RX component type (ID) 00313

Definition: Following are the values for this field:

HL7 Table 0166 - RX component type

Value	Description
B	Base
A	Additive

For the non-IV case, the “B” value may still apply. For example, if a custom dermatologic salve is being prepared, the “B” item might be a standard base ointment into which other components are mixed.

The amount of the “base” specified in the “B” segment(s) is defined to be the quantity into which amounts specified in the “A” components are mixed. Thus the RXC segments as a group define the “recipe” for a particular amount (defined by the base segment(s)). The give amount, as defined in the RXO, does not need to correspond to this base amount. For example, the RXC segments may specify a recipe for a liter of a standard type of saline with 1 gram of a particular antimicrobial, while the give amount (from the RXO) may specify the administration of 2 liters of this IV-solution every 24 hours.

The amount specified in each “A” segment is defined to be the quantity to be added to the amount of the base as specified in its RXC segment.

If any “base” components are present then these should be transmitted first. The first “base” component in the transmission should be considered the “primary base” if such a distinction is necessary. Similarly, the first “additive” in the transmission should be considered the “primary additive” if such a distinction is necessary.

7.3.18.2 RXC-2 Component code (CE) 00314

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field is equivalent to OBR-4-universal service ID. It defines the base or component in the same manner as the give and dispense codes. As with the give and dispense codes, it may contain text only, code only, text + code, or text + code + units (implied or explicit). As with the give and dispense codes, if RXC-4-component units is present, this overrides the units implied by the code. If only text is present, the pharmacy or treatment application must include a manual review or reentering of the component drug or treatment.

Usage notes:

<identifier (ST)> component should be the code number

For Australian Medicines Terminology (AMT)

For MIMS form use the MIMS Gencode

e.g. 714^Beclomethasone dipropionate^MIMS-GENCODE

<text (ST)> component should be the full textual description of the generic ingredient and should always be transmitted.

<name of coding system (IS)> component should be a 'MIMS-GENCODE', or 'AMT' appropriate to the <identifier (ST)> component.

<alternate identifier (ST)> component should be a code for an Australian approved generic name

<alternate identifier (ST)> component should be an Australian approved generic name

<name of alternate coding system (IS)> component should be a recognised generic coding system such as 'MIMS-GENCODE', 'AMT'

Addition notes for MIMS use (informative):

1. *For MIMS ASCII distribution the text component should come from MIMS GENDAT table tfgeneric field.*
2. *Stability concern: Generics are subject to changes due to the TGA international name harmonisation exercise.*

7.3.18.3 RXC-3 Component amount (NM) 00315

Definition: This field identifies the amount of this component to be added to the specified amount of the base.

7.3.18.4 RXC-4 Component units (CE) 00316

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the units for the component amount. If present, this overrides the units implied by RXC-2-component code. This must be in simple units that reflect the actual quantity of the component being added. It does not include compound units.

Refer to 7 Patient Referral (see page 347) for instructions on how to use this field.

7.3.18.5 RXC-5 Component strength (NM) 01124

Definition: Use when RXC-2-component code does not specify the strength. This is the numeric part of the strength, used in combination with RXC-6-component strength units.

7.3.18.6 RXC-6 Component strength units (CE) 01125

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: Use when RXC-2-component code does not specify the strength. This is the unit of the strength, used in combination with RXC-5-component strength.

Note: These units can be a “compound quantity;” i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

Refer to 7 Patient Referral (see page 347) for instructions on how to use this field.

7.3.18.7 RXC-7 Supplementary code (CE) 01476

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

This field accommodates the identification of any codes that might be associated with the pharmaceutical or other treatment substance. Common codes include: the Generic Product Identifier (GPI), Generic Code Number_Sequence Number (GCN_SEQNO), National Drug Code (NDC).

7.3.19 RXE - Pharmacy/treatment encoded order segment

Refer to HL7 Standard Version 2.4 section 4.14.4 RXE - PHARMACY/TREATMENT ENCODED ORDER SEGMENT page 4-99. Refer also to AS4700.3-2005.

7.3.20 RXD - Pharmacy/treatment dispense segment

Refer to HL7 Standard Version 2.4 section 4.14.5 RXD - PHARMACY/TREATMENT DISPENSE SEGMENT page 4-106. Refer also to AS4700.3-2005.

7.3.21 RXA - Pharmacy/treatment administration segment

Refer to HL7 Standard Version 2.4 section 4.14.7 RXA - PHARMACY/TREATMENT ADMINISTRATION SEGMENT page 4-115. Refer also to AS4700.3-2005.

7.3.22 PRB - PROBLEM DETAIL SEGMENT PRB

Refer to HL7 Standard Version 2.4 section 12.4.2 PRB - PROBLEM DETAIL SEGMENT PRB page 12-20.

7.3.23 VAR - Variance segment

Refer to HL7 Standard Version 2.4 section 12.4.5 VAR - VARIANCE SEGMENT page 12-28.

7.3.24 ROL - Role segment

Refer to HL7 Standard Version 2.4 section 12.4.3 ROL - ROLE SEGMENT page 12-24.

7.3.25 GOL - Goal segment

Refer to HL7 Standard Version 2.4 section 12.4.1 GOL - GOAL DETAIL SEGMENT page 12-17.

7.3.26 PTH - Pathway segment

Refer to HL7 Standard Version 2.4 section 12.4.4 PTH - PATHWAY SEGMENT page 12-27.

7.3.27 MSA - Message acknowledgement segment

Refer to 2.1.8 MSA - message acknowledgment segment (see page 34).

7.3.28 ERR - Error segment

Refer to 2.1.5 ERR - error segment (see page 31)

7.4 Representation of Clinical Information

7.4.1 Overview

Patient referral messages carry clinical information and history about the patient concerned in a structured format.

Medication and allergies have segments groups which are designed specifically to carry that information.

Referral messages should have their information structured according to the Appendix 9 HL7v2 Virtual Medical Record (Normative) (see page 490) which specifies how to structure the OBX segments of a message where specific segments are not provided.

The referral information should be indicated by an OBR-4 Universal service identifier (CE) value as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212). This indicates that this OBR and following OBX segments in that group contains clinical history and potentially contains structured VMR related data.

Patient referrals containing structured HL7v2 VMR information should contain an OBX as follows which acts as a header. Note that the OBX-4 sub-ID field is the dotted decimal root value that structured child elements must belong. In the example below this is 1 but may be another number. The LOINC value "74028-2^^LN" in OBX-3 Observation Identifier indicates that this OBX is defining the report template ID which can be found in OBX-5 Observation Value (RP).

HL7v2 VMR header OBX

```
OBX|1|RP|74028-2^^LN|1|HL7V2-VMR.v1^HL7V2 VMR&99A-9AAC5A649D18B6F2&L^TX^Octet-stream|||||F
```

A minimal referral should include some notes. Note that the OBX-4 sub ID (ST) contains the value 1.1.3. This value has a dotted decimal root value of "1" with the remainder of the sub-ID value being ".1.3". It therefore belongs to the report template defined in the above example which specifies "HL7V2-VMR-v1" as the report template ID.

Referral Notes

```
OBX|5|FT|8251-1^Notes^LN|1.1.3|headache\.br\present for a week|||||F
```

7.4.2 Disallowed segments

The following segments which are must not be used by senders. Senders cannot assume that the receiver will process this information. Receivers may reject messages containing these segments using the HL7 acknowledgment protocol.

- ACC
- AUT
- CTD
- DRG
- DSC
- DSP
- GT1
- IN2
- NTE
- PR1

7.4.3 Fields for clinical history

Referral communications normally carry clinical information and history.

Clinical information is structured as grouped segments and states the occurrence or intent of the information.

Clinical history elements have an OBR-4 value as specified by 4.4.1.4.1 OBR-4 codes in referral messages (see page 212).

The procedure (PR1) segment should not be used as it been deemed clinically inexpressive instead procedures should be represented in OBX segments using the procedure nodes of the VMR.

Allergies and Medications should be atomically encoded into the AL1 and RXO/RXR/RXC segments.

For transmitting atomic history, refer to Appendix 9 HL7v2 Virtual Medical Record (Normative) (see page 490) which details how to structure medical record information into a series of OBX which should fall under the the Clinical Information OBR/OBX group.

7.5 Display Segments

Please refer to section 4.5 Display Segments (see page 247).

Since patient referral messages may contain multiple OBR groups, each group should contain its own set of display segments for each desired rendering format.

The main body of the referral indicated by the first OBR segment with an OBR-4 value as specified in section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212). This OBR/OBX group should include in its rendering the atomic data contained (in atomic OBX segments including HL7 v2 VMR) from within it, plus a display representation of all atomic data content in AL1 segments (allergy), and medication data contained in RXO segment groups.

Referral messages may contain multiple display segments.

7.6 Correcting referrals sent in error

No delete mechanism exists for REF messages and if a report has been sent in error, then this should be stated in a correction to the original message with the same RF1-6 Originating Referral Identifier. Use Correction status in RF1-1 to indicate this.

8 Acknowledgement

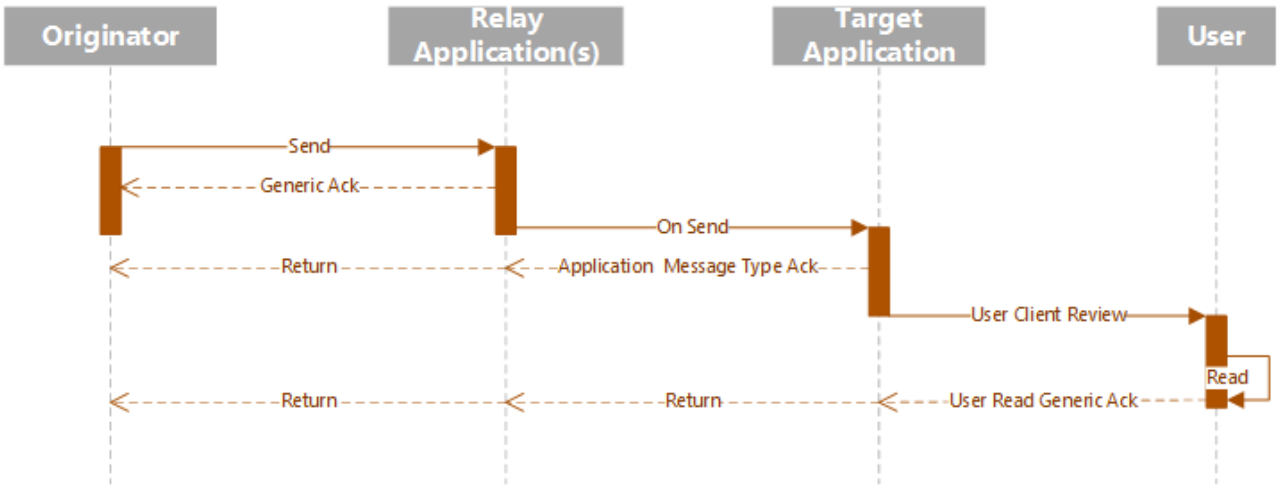
8.1 Purpose

The importance of acknowledgements (ACKs) in HL7 should not be understated. The only messages that should not be acknowledged are ACKs themselves (Acknowledging ACKs results in an infinite loop). Assuming delivery is not enough when clinical safety is at risk. A sending system user wants to know that their message has been successfully delivered and imported into the recipient system. An extension of this is human read acknowledgements indicating that the message content has been viewed.

ACKs also have other benefits such as highlighting how far in a delivery chain a message was transmitted before it failed, and thus which system to investigate the fault in. This implies that a sending system may receive multiple ACKs for a single message. Determining who the ACK originates from requires inspection of the sending facility and sending application. All actors in the chain of delivery have the potential to provide ACKs.

The ACK that indicates delivery to the target system is the application ACK and should be the defined ACK for the message type. E.g. REF^I12^REF_I12 results in a RRI^I12^RRI_I12, ORU^R01^ORU_R01 results in a ACK^R01^ACK_R01.

Systems upstream or users downstream from the target system, or the target system itself, may produce generic ACKs (|ACK|). This is because other segments in the message may be unreadable because of errors or they are unavailable to the processing system. This type of ACK is informational, the confirmation of delivery to the target system relies on the application ACK. These additional ACKs are accept ACKs as defined by the international standard.



Should delivery fail, faults that can be remedied are highlighted. These would have otherwise been unknown to the sender as the receiver would be unaware they should have received a message. This also allows systems to provide notification of human read acknowledgements of messages, mapping the sending application to the provider viewing the message contents.

The international HL7 standard describes 2 modes of acknowledgement in chapter 2: "original mode" and "enhanced mode". For Australian purposes enhanced mode acknowledgement is required.

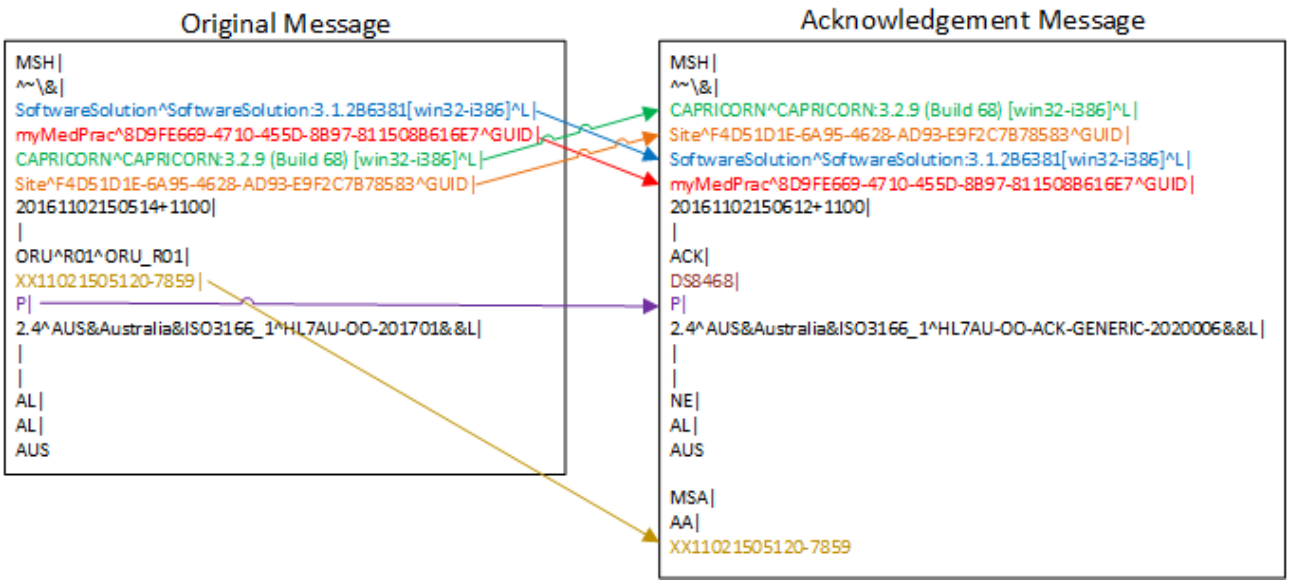
"The HL7 Standard makes no assumptions about the ownership of data. It also makes no requirements of its own on the subsequent action of the recipient of data, nor does it make any assumption about the design or architecture of the receiving application system. The scope of HL7 is restricted to the specification of messages between application systems, and the events triggering them. HL7 does not explicitly support, but can be used with, systems that support store and forward and data broadcast facilities (see the HL7 Implementation Support Guide).
The HL7 Standard makes no functional interpretation of the requirement that a system commit the data in a message to its database before acknowledging it. All that is required is that the receiving system accept responsibility for the data, providing the same integrity test that it would apply to data from any source." **[1]** (see page 372)

Each message in a batch should be acknowledged individually. There is no requirement to ACK the batch as such.

8.2 MSA Usage

To generate an ACK message:

1. Enter Original Message MSH-3(Sending Application) into ACK MSH-5(Receiving Application). (Blue)
2. Enter Original Message MSH-4(Sending Facility) into ACK MSH-6(Receiving Facility). (Red)
3. Fill with software generating ACK into ACK MSH-3(Sending Application). (Green)
4. Enter Original Message MSH-6(Receiving Facility) into ACK MSH-4(Sending Facility). (Orange)
5. Enter Original Message MSH-11(Processing ID) into ACK MSH-11(Processing ID). (Purple)
6. Enter Original Message MSH-10(Message control ID) into ACK MSA-2(Message control ID). (Gold)
7. ACK MSH-10(Message control ID) should be unique and unrelated to Original Message MSH-10(Message control ID). (Maroon)



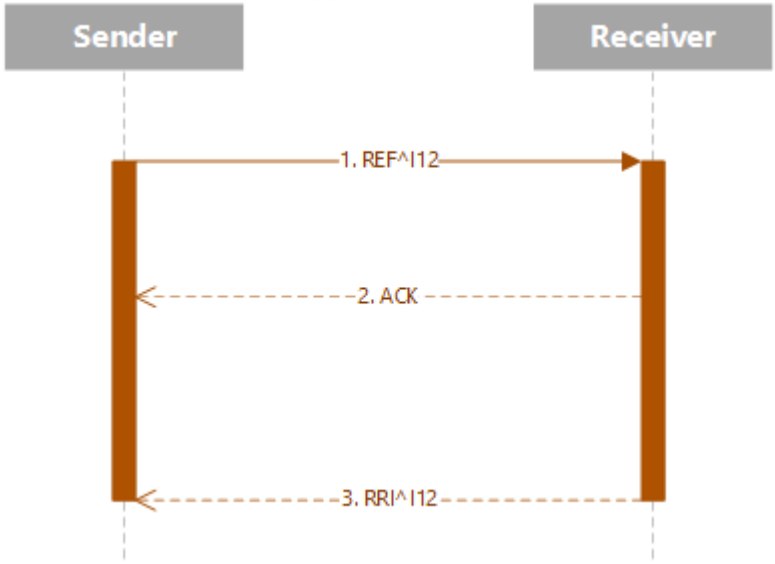
MSA segment details can be found here (see page 34).

8.3 Accept vs Application Acknowledgements

The HL7 acknowledgment paradigm distinguishes both accept and application acknowledgments, as well the conditions under which each is required. With a positive accept acknowledgment, the receiving system commits the message to safe storage in a manner that releases the sending system from the need to resend the message. After the message has been processed by the receiving system, an application acknowledgment may be used to return the resultant status to the sending system.

Example Scenarios

1. Sender to Receiver with application ACK.



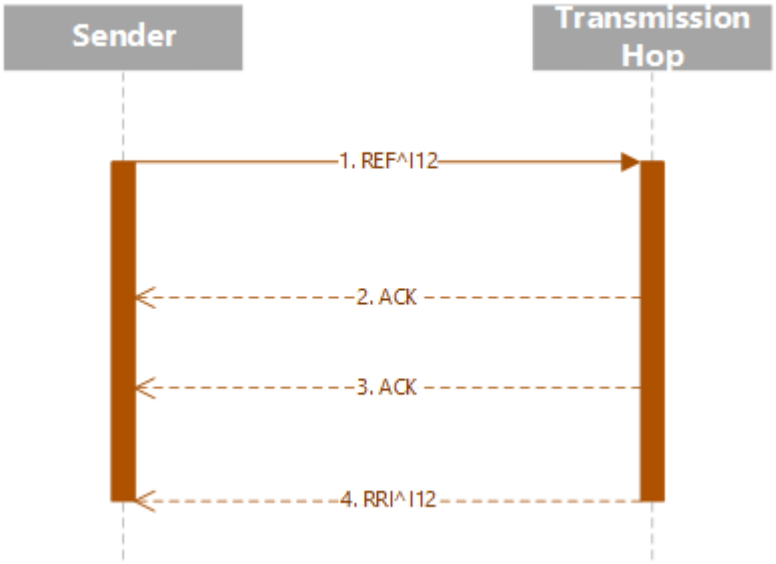
   a. REF Examples 1.7 Level 1.zip Level 1 Example 1 in Appendix 6 Example Messages - 6.2 Patient Referral Examples (see page 475).
   "MSH|^~\&|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID||JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|20170608223629+1000|| REF^I12^REF_I12|MOE06082236987-957.1.4|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706-L1&&L|||AL|AL|AUS<cr>
   RF1…"

   b. MSH|^~\&|SomeSoftware^SomeSoftware V1.2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170608223642+1000||ACK|945375|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-201701&&L|||NE|AL|AUS<cr>
   MSA|CA|*MOE06082236987-957.1.4*

   c. MSH|^~\&|SomeSoftware^SomeSoftware V1.2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170608224009+1000||RRI^I12^RRI _I12|AB19274|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706/RRI&&L|||NE|AL|AUS<cr>
   MSA|AA|*MOE06082236987-957.1.4<cr>*
   RF1|…<cr>

PRD|…<cr>
PID|…<cr>

2. Sender to Intermediary with accept ACKs and later application ACK.



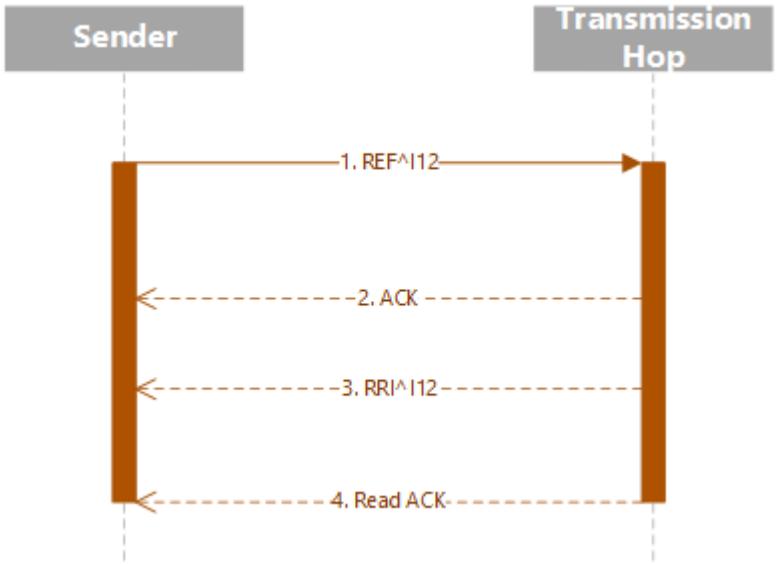
a. REF Examples 1.7 Level 1.zip Level 1 Example 1 in Appendix 6 Example Messages - 6.2 Patient Referral Examples (see page 475).
"MSH|^~\&|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID||JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|20170608223629+1000|| REF^I12^REF_I12|MOE06082236987-957.1.4|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706-L1&&L|||AL|AL|AUS<cr>
RF1…"

b. MSH|^~\&|MiddleWare^MiddleWare V2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170608223849+1000||ACK|945376|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-201701&&L|||NE|AL|AUS<cr>
MSA|CA|*MOE06082236987-957.1.4*

c. MSH|^~\&|SecondHopSoftware^ SecondHopSoftware Build 5.2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170608223701+1000||ACK|8ajojeaha2|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-201701&&L|||NE|AL|AUS<cr>
MSA|CA|*MOE06082236987-957.1.4*

d. MSH|^~\&|SomeSoftware^SomeSoftware V1.2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170608223629+1000||RRI^I12^RRI _I12|AB19275|P|
2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706/RRI&&L|||NE|AL|
AUS<cr>
MSA|AA|*MOE06082236987-957.1.4<cr>*
RF1|…<cr>
PRD|…<cr>
PID|…<cr>

3. Sender to Intermediary with multiple ACKs. Includes positive and negative user read ACK examples.



a. REF Examples 1.7 Level 1.zip Level 1 Example 1 in Appendix 6 Example Messages - 6.2 Patient Referral Examples (see page 475).
"MSH|^~\&|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID||JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|20170608223629+1000|| REF^I12^REF_I12|MOE06082236987-957.1.4|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706-L1&&L|||AL|AL|AUS<cr>
RF1…"

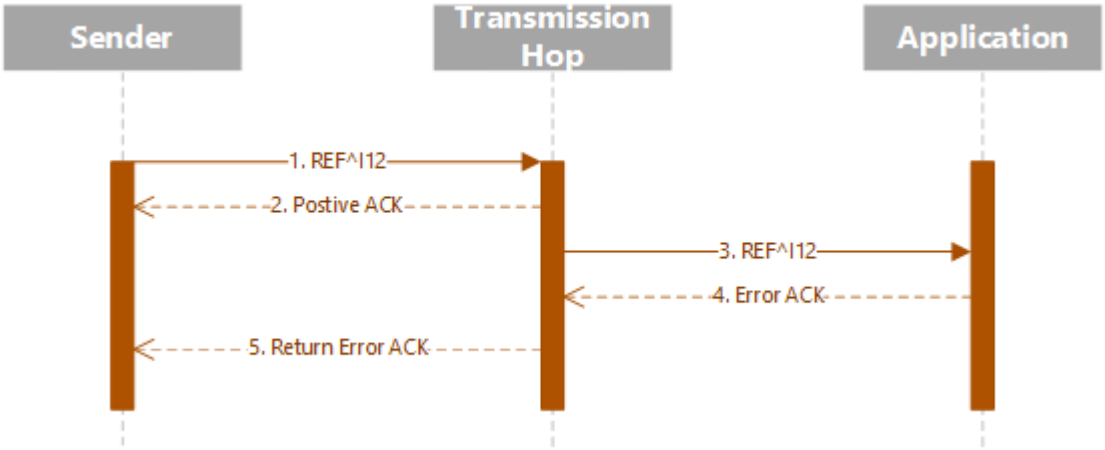
b. MSH|^~\&|MiddleWare^MiddleWare V2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170608223849+1000||ACK|945376|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-201701&&L|||NE|AL|AUS<cr>
MSA|CA|*MOE06082236987-957.1.4*

c. MSH|^~\&|SomeSoftware^SomeSoftware V1.2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170608223852+1000||RRI^I12^ RRI _I12|AB19275|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706/RRI&&L|||NE|AL|AUS<cr>
MSA|AA|*MOE06082236987-957.1.4<cr>*
RF1|…<cr>
PRD|…<cr>
PID|…<cr>

d. Positive read ACK:
MSH|^~\&|DrJohnSmith^889119NF^AUSHICPR|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170609123701+1000||ACK|8ajojeaha2|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-READ-2020006&&L|||NE|AL|AUS<cr>
MSA|AA|*MOE06082236987-957.1.4*

Negative read ACK:
MSH|^~\&|DrJohnSmith^889119NF^AUSHICPR|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|20170609123701+1000||ACK|8ajojeaha2|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-READ-2020006&&L|||NE|AL|AUS<cr>
MSA|AR|*MOE06082236987-957.1.4*|Report is unreadable.
ERR|^^^EUserError&Report is unreadable&L

4. Sender to Intermediary with Error/Reject ack from application/intermediary.



   a. REF Examples 1.7 Level 1.zip Level 1 Example 1 in Appendix 6 Example Messages - 6.2 Patient Referral Examples (see page 475).
   "MSH|^~\&|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID||JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|20170608223629+1000|| REF^I12^REF_I12|MOE06082236987-957.1.4|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706-L1&&L|||AL|AL|AUS<cr> RF1…"
   b. MSH|^~\&|MiddleWare^MiddleWare V2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|*20170608223650*+1000||ACK|945379|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-201701&&L|||NE|AL|AUS<cr>
   MSA|CA|*MOE06082236987-957.1.4*
   c. *See point 1.*
   d. MSH|^~\&|SomeSoftware^SomeSoftware V1.2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|*20170608224201*+1000||ACK|8ajojeaha2|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-201701&&L|||NE|AL|AUS<cr>
   MSA|AE|*MOE06082236987-957.1.4*||||EHL7RelayAccessException^"Your user is not authorised to relay messages on this server. Access Denied"^L^EHL7RelayAccessException^^L
   ERR|^^^EHL7RelayAccessException&"Your user is not authorised is not authorised to relay messages on this server. Access Denied"
   e. MSH|^~\&|SomeSoftware^SomeSoftware V1.2^L|JD Medical^F144C1B5-56C7-43C1-80A4-83AD87D4FE5E^GUID|MERIDIAN^MERIDIAN:3.1.4 [win32-i386]^L|Buderim GE Centre Demo^0AE5C60C-A510-43B3-A509-C57F29B2D368^GUID|*20170608224201*+1000||ACK|8ajojeaha2|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-ACK-201701&&L|||NE|AL|AUS<cr>
   MSA|AE|*MOE06082236987-957.1.4*||||EHL7RelayAccessException^"Your user is not authorised to relay messages on this server. Access Denied"^L^EHL7RelayAccessException^^L
   ERR|^^^EHL7RelayAccessException&Your user is not authorised is not authorised to relay messages on this server. Access Denied&L

8.4 User Read Acknowledgements

User read acknowledgements serve the purpose of notifying the sender that a specific recipient has viewed the message and confirmed they have read the content. The user performing the read confirmation is therefore provided in the return acknowledgement. The Internal version ID component of MSH-12 is used to confirm an acknowledgement specifically is a user read. MSH-3 is the field is used for the purpose of reporting the read confirmation user details.

MSH-12-3 must be valued “HL7AU-OO-ACK-READ-2020006”

Valid formats for the user details in MSH-3(Sending Application) are:

- Username^<Medicare Australia provider number>^AUSHICPR
- Username^<HPI-I>@<HPI-O>^NPIO

8.5 ACK - general acknowledgment

The simple general acknowledgment (ACK) can be used where the application does not define a special application level acknowledgment message or where there has been an error that precludes application processing. It is also used for accept level acknowledgments. General acknowledgments are well suited to the scenario where a system confirms receipt of message transport to halt retransmission attempts. It allows a system to generate an acknowledgment, for this type of scenario, without needing to fully process all the segments in the message which may have major faults that stop the responding system from generating an acknowledgement at all.

MSH-12-3 must be valued “HL7AU-OO-ACK-201701”

ACK^^ACK	**General Acknowledgment**	**Chapter**
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

Note: For the general acknowledgment (ACK) message, the value of *MSH-9-2-Trigger event* is equal to the value of *MSH-9-2-Trigger event* in the query message being acknowledged. The value of *MSH-9-3-Message structure* for the general acknowledgment message is always ACK.

[1]HL7 Messaging Standard Version 2.4, 2.3.2 Acknowledgments: original mode, 2000

Appendix 1 Parsing HL7v2 (Informative)

1 Introduction

HL7V2 was created prior to the advent of XML and established its own encoding formats to allow complex hierarchical data structures to be encoded into text strings. It was a significant advance on the previously standard fixed length data formats and was designed to allow backwards and forward compatibility. Unlike XML it does not add the field names to the message and prior out of band metadata is required to read the values in the message. This makes it less human readable than XML but results in very small messages which were originally designed to pass through 7-bit only transmission pathways. It is highly efficient but does require a careful parser implementation to take advantage of the format. These days XML parsers are common and widely available and jump start a developer's ability to read a XML message, however this comes at a cost of message size. HL7V2 parsers are not difficult to write but a careful implementation is required and this technical report is designed to bring together the relevant information into one document to allow a high-quality implementation of HL7V2 parsers.

2 HL7 Message Encoding

HL7V2 messages are most commonly ASCII text files with strict ASCII encoding (8 bit strings). They should only have cursor return (ASCII 13) and characters between ASCII 32 and ASCII 127 in the file unless MSH-18 specifies an alternate encoding. In Australia it is suggested that 8859/1 (extended ASCII) encoding be supported as it allows extended characters for eg. accented characters. White space (the space character) is important. In more recent times some users have used Unicode or UTF-8 encoding of HL7V2 messages which avoids the need for escaping characters above ASCII 127 but requires special processing. These characters can be included in strict ASCII files by escaping the Unicode characters above the ASCII set, but in non-English speaking locales this can incur significant overhead as most characters need to be escaped. A Unicode HL7V2 message should use a byte order mark (BOM) at the start of the file to indicate that it is Unicode and can in general only be used with prior agreement. In Australia all standard HL7 Messages should use strict ASCII encoding or 8859/1 (Extended ASCII) as support of other encodings is very limited. The encoding should be specified in MSH 18. For the purposes of this guide ASCII encoded messages are assumed. It would be desirable that systems implement support for UTF-8 as this is likely to be a future requirement. Care should be taken when importing textual data from word processing applications as Unicode characters are often used for special symbols and they need to be translated into characters acceptable for the specified encoding.

3 HL7 Message Structure

HL7 Messages are collections of ASCII characters (between ASCII 32 and ASCII 127 for strict ASCII) separated by cursor return (ASCII 13) characters. Each string is called a segment and each segment is further divided into fields, which can optionally repeat, components and sub components. There is no ability to extend the hierarchy any

deeper than this. However segments, while a flat list in the message can form their own hierarchies using the message structures detailed in the relevant chapters. This allows a further level of nesting to represent hierarchies.

A simple incomplete example of a HL7V2 message is below:

```
MSH|^~\&|MERIDIAN|Demo Server|||20100202163120+1100||ORU^R01|
XX02021630854-1539|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU||||AUS
PID|1||||SMITH^Jessica^^^^^L||19700201|F|||1 Test
Street^^WODEN^ACT^2606^AUS^C~2 Test Street^^WODEN^ACT^2606^AUS^C
```

This fragment of a message shows 2 segments, a "MSH" segment and a "PID" segment. It also shows fields, repeats of fields, components and sub-components. Theses are explained below.

To encode complex data into text, delimiters are required and these are specified after the MSH on the first line. In this case, which is the usual and in general only case in Australia, the delimiters are "|^~\&". HL7 Messages can only start with a "MSH" or a "FHS" and in both cases the delimiters are specified immediately after the MSH or FHS.

No field names appear in the messages and apart from the first 3 characters of every line and the delimiters after MSH/FHS all the text in a message is data. To read this data reliably requires knowledge of the HL7 standard and what position the data will appear in. The message can be reliably parsed without this knowledge but data extraction requires knowledge that resides in the standard itself. Specific knowledge of segments should **NOT** be used to parse messages as over time the segments will be extended and assumptions about the number of fields, or the presence or absence of eg. sub components or repeats of fields will become incorrect and result in errors. It is common for a single text string (usually a "IS") data type to be extended to a "CE" data type in later versions and this is the most obvious example of why parsers should not assume the subcomponent structure in any field position. If the parsing is done without knowledge of the segment structure and data is extracted according to the HL7 guidelines then this type of change is backward and forward compatible.

3.1 Segments

Each line in a HL7 message is known as a Segment. It starts with a 3-character textual segment identifier which is always upper case. e.g. **"MSH"** or **"PID"** or **"PV1",** it ends at a ASCII 13 (cursor return) character. The three-letter abbreviation is usually a mnemonic for its purpose. "MSH" stands for "Message Header" and PID for "Patient Identification". This will either be at the start of a message of immediately following a cursor return character (ASCII 13). Messages should terminate in a ASCII 13 character.

3.2 Fields, Components and Sub-Components

This fragment of HL7 is used to illustrate this:

```
PID|Field1|Component1^Component2|Component1^Sub-Component1&Sub-
Component2^Component3|Repeat1~Repeat2
```

- Segment - e.g. PID
    - Field1 - Simple
    - Field2 - Has Components
        - Component1
        - Component2

- Field3 - Components and Sub-Components
    - Component1
    - Component2
        - Sub-Component1
        - Sub-Component2
    - Component3
- Field4 - Repeating field value
    - Repeat1
    - Repeat2

Each segment is divided into a variable number of fields. The number of fields depends on the version of the standard in use and how complete the data in the message is. No assumptions should be made about the number of fields in a given segment. Fields are separated by the field separator "|". The next level of the hierarchy is the ability of a field to repeat. This is indicated by the Repeat Delimiter "~" or tilde. No assumptions about the ability of a field to repeat should be made in parsing a message as a non repeating field can be made to repeat in later versions. Components are the next level and use "^" character as a delimiter. Components can be divided into Sub-Components using the "&" character. This is the limit of the hierarchy within HL7 V2 and all data structures must be encoded within these limits.

It is important to know that the delimiters are only added when required to separate data. In a segment with 30 fields, but only field 10 valued only the field delimiters prior to the value are included, all those after field 10 are omitted. As the number of fields in a segment varies with the version of a standard, trailing, unused delimiters serve no purpose and should ideally be removed to reduce message size. The same convention applies to Repeat, Component and Sub-Component delimiters.

Because these delimiter characters "|^~&" and the cursor return (ASCII 13) are used to define the tree structure of a HL7 message they must not appear within any text string in the data. To enable this all reserved characters are escaped using the "\" character (back slash). To add a delimiter character to the actual data contents the character is replaced by a special sequence of characters called an escape sequence. The escape sequence is always preceded and ended by the escape character "\".

The Escape Sequences are listed below. This applies to every field of every segment excluding the location in MSH and FHS segments where the delimiters are defined. Because the escape character itself may appear in a message it must also be escaped.

Field delimiter "|" "\F\"
Repeat delimiter "~" "\R\"
Component delimiter "^" "\S\"
Sub-Component delimiter "&" "\T\"
Escape delimiter "\" "\E\"
Cursor Return (ASCII 13) "\.br\"
Within all data in any place with a message this escaping must be done or else these reserved characters will drastically affect the message structure and result in potentially serious truncation or loss of data. This is not restricted to free text fields but applies to all data values in the message.

Within Formatted text fields other formatting characters are defined to allow the highlighting of text and control of page layout. These are covered later.

4 Datatypes

The HL7 Datatypes are documented in Chapter 2 of the HL7 International standard and Section 3 in the HL7 Australia guide, and in this chapter the way they are encoded using Components and subcomponents is documented. A Data type resides within a single field and does not use the repetition character, although the datatype itself may repeat.

The simplest data types are simple string values. Examples of this include "ST" and "IS". Any reserved characters with the string must be escaped but value is simply inserted into the message between 2 field delimiters as below.

```
An example ST Value: "|String Value|"
```

More complex types use Components and Sub-Components and this allows 2 two level hierarchy. Some data types such as the HD (Hierarchic designator) is encoded using Component delimiters when it stands alone, but Sub-Component delimiters when embedded in another datatype such as a CX value.

```
An example HD Value (e.g.MSH Sending Facility):
"|Buderim GE Centre^7C3E3681-91F6-11D2-8F2C-444553540000^GUID|"
```

```
An Example XCN Value encoded with Another datatype (e.g. OBR Principle
result interpreter):
"|0191324T&McIntyre&Andrew&&&Dr.&&&AUSHICPR|"
```

```
Same XCN Value in a field by itself (e.g. OBR Ordering Provider):
"|0191324T^McIntyre^Andrew^^^Dr.^^^AUSHICPR^L^^^UPIN|"
```

Data types are also extended in later versions of the standard and no assumptions about the number of components or Sub-Components should be made.

5 Parsing HL7 V2

It is important to parse messages using the conventions above as this results in reliable access to data values even if the version of the standard is not what you expect. While it is possible to define a BNF grammar for HL7 V2 and parse messages using a generated parser, a hand coded parser is often used.

Messages should start with "MSH" or "FHS" and this sequence of characters is required to indicate the start of a message.

Once this is located the data can be split into segments by locating instances of the ASCII 13 character (Cursor return). The message should terminate with a ASCII 13 character.

No weight should be given to the segment name at this point and this process will result in an ordered list of segment strings.

The next step is to split these segment strings into the 3 character segment name and an ordered list of fields. This should be done by splitting the segment string using the field delimiter "|"

Each field should then be split into repeats using the Repetition Delimiter "~"

Each repeat is split into Components using the Component Delimiter "^"

Each Component is split into Sub-Components using the Sub-Component separator "&"

At this point there is no need to take the escape character into account.

This process produces a tree of values (a parse tree), which for the example looks like this:

```
Example HL7 Fragment:
PID|Field1|Component1^Component2|Component1^Sub-Component1&Sub-
Component2^Component3|Repeat1~Repeat2
```

The resulting parse tree with values in parentheses:

- Segment = "PID"
    - F1
        - R1 = "Field1"
    - F2
        - R1
            - C1 = "Component1"
            - C2 = "Component2"
    - F3
        - R1
            - C1 = "Component1"
            - C2
                - SC1 = "Sub-Component1"
                - SC2 = "Sub-Component2"
            - C3 = "Component3"
    - F4
        - R1 = "Repeat1"
        - R2 = "Repeat2"

Legend
F Field
R Repeat
C Component
SC Sub-Component
A tree has leaf values and nodes. Only the leaves of the tree can have a value. All data items in the message will be in a leaf node.

At this point the data items in the message are in position in the parse tree, but they can remain in their escaped form. To extract a value from the tree you start at the root of the Segment and specify the details of which field

value you want to extract. The minimum specification is the field number and repeat number. If you are after a component or sub-component value you also have to specify these values.

If for instance if you want to read the value "Sub-Component2" from the example HL7 you need to specify: Field 3, Repeat 1, Component 2, Sub-Component 2 (PID.F1.R1.C2.SC2) Reading values from a tree structure in this manner is the only safe way to read data from a message and is very fast for accessing values in most implementation environments.

All values should be accessed in this manner. Even if a field is marked as being non-repeating a repeat of "1" should be specified as later version messages could have a repeating value.

To enable backward and forward compatibility there are rules for reading values when the tree does not match the specification (e.g. PID.F1.R1.C2.SC2) The common example of this is expanding a HL7 "IS" Value into a Coded Value ("CE"). Systems reading a "IS" value would read the Identifier field of a message with a "CE" value and systems expecting a "CE" value would see a Coded Value with only the identifier specified. A common Australian example of this is the OBX Units field, which was an "IS" value previously and became a "CE" Value in later versions.

```
Old Version: "|mmol/l|" New Version: "|mmol/l^mmol/L^UCUM|"
```

Systems expecting a simple "IS" value would read "OBX.F6.R1" and this would yield a value in the tree for an old message but with a message with a Coded Value that tree node would not have a value, but would have 3 child Components with the "mmol/l" value in the first subcomponent. To resolve this issue where the tree is deeper than the specified path the first node of every child node is traversed until a leaf node is found and that value is returned.

This is a general rule for reading values: **If the parse tree is deeper than the specified path continue following the first child branch until a leaf of the tree is encountered and return that value (which could be blank).**

Systems expecting a Coded Value ("CE"), but reading a message with a simple "IS" value in it have the opposite problem. They have a deeper specification but have reached a leaf node and cannot follow the path any further. Reading a "CE" value requires multiple reads for each sub-component but for the "Identifier" in this example the specification would be "OBX.F6.R1.C1" The tree would stop at R1 so C1 would not exist. In this case the unsatisfied path elements (C1 in this case) can be examined and if every one is position 1 then they can be ignored and the leaf of the tree that was reached returned. If any of the unsatisfied paths are not in position 1 then this cannot be done and the result is a blank string.

This is the second Rule for reading values: **If the parse tree terminates before the full path is satisfied check each of the subsequent paths and if every one is specified at position 1 then the leaf value reached can be returned as the result.**

In the second example every value that makes up the Coded Value, other than the identifier has a component position greater than one and when reading a message with a simple "IS" value in it, every value other than the identifier would return a blank string.

Following these rules will result in excellent backward and forward compatibility. It is important to allow the reading of values that do not exist in the parse tree by simply returning a blank string. The two rules detailed above, along with the full tree specification for all values being read from a message will eliminate many of the errors seen when handling earlier and later message versions.

At this point the desired value has either been located, or is absent, in which case a blank string is returned. To return the value to the requester however this returned string must be checked for escape characters and these characters dealt with. This is detailed in the next section.

6 Dealing with reserved characters and delimiters

As detailed above the HL7V2 delimiters cannot appear in the data of a message or they would distort the data tree and cause serious data loss. They will be escaped using the escape sequences detailed above. Free Text also has formatting commands with there own escape sequences, but every field must handle the case of delimiters.

Once a value have been extracted from a parse tree it must be checked for escape characters and if present these escape sequences need to be converted back into the unescaped version. Generally this involves replacing a sequence of characters with a single character.

The backslash "\" is the escape character in the string and if there are no backslash characters in the string nothing needs to be done. However if there are any backslash characters in the string these must be dealt with. It is important to note that this must not be done with search and replace as this will yield erroneous results in many cases.

The only reliable way to remove escape characters is to iterate over the string from the start testing for the presence of a backslash ("\") character. If one is found then the following characters, up to the next "\" are read and this value looked up and the whole sequence, including the 2 backslash characters replaced with the correct character.

Example 1: the input string of "10\S\9/l" becomes "10^9/l"

Example 2: the input string of "Obstetrician \T\ Gynaecologist" becomes "Obstetrician & Gynaecologist"

Example 3: the input string of "201104\E\123456" becomes "201104\123456"

7 Free Text Formatting

In free text fields there are a large number of other formatting commands that may appear which are enclosed in escape sequences. These must be converted to an appropriate formatting code in the destination formatting scheme. Because they are enclosed in escape characters it is often efficient to handle them when un-escaping the delimiter characters, but they can be handled in other ways as long as search and replace is not used, as this will cause errors depending on the order in which the search and replace is executed.

8 Unicode characters

The HL7 standard describes multi-byte character set escape sequences to allow re-selection of character set code pages that are often used for languages that cannot use the ISO 8859 codepage. e.g. Japanese Cyrillic. These have been superseded by Unicode which provides a single character encoding to encompasses all languages. Unicode should be used only by site agreement, and is not recommended for general use as limited support is available in receiving systems. Character set selection escape sequences (\Cxxyy\ and \Mxxyyzz\ should not be used). In the case where Unicode characters are required for display purposes, an XHTML display segment in ASCII encoding is suggested. In this encoding Unicode characters can be represented in ASCII XHTML using the HTML escape sequences for Unicode characters. The use of any characters greater than 127 is not allowed.

Example: the cent sign (¢) is represented using "¢" in the html. In the actual message HL7 escaping would result in "\T\#162;"

Appendix 2 Rendering of reports and display formats (Normative)

A2.1 General

The display segment is mandatory (refer to conformance point HL7au:000008) to assure the contents of the pathology report be interpreted in the context that the pathology provider intended. Although there are a number of allowed display formats (XHTML, RTF, PDF or HL7 Formatted text - FT) there isn't a prescribed format to be used. The display format type used will depend on the display features required. This appendix provides detail on the display format types of XHTML and PDF.

Note: If more than one display segment is used then each display type must contain the same report detail.

A2.2 Use of HL7 Formatted text (FT)

Refer to Datatypes FT.

A2.3 Use of XHTML as display segments

A standards based Mechanism for using HTML as display segments in HL7V2 messages

The use of HL7V2 for transmitting clinical data occurs on a massive scale worldwide. This has been the case for many years and it works well as a basic level, but the richness and control of the display of this data has not kept pace with what users expect. This can create resistance to the adoption of HL7V2 by new players and is a barrier to more widespread adoption. Over that last 15 years the availability of high quality components for the display of HTML encoded documents is become ubiquitous and quite standards compliant and represents a good choice for a display format for clinical documents where a higher fidelity display is desired. This document represents a constraint on the HTML features that can be used for this purpose and specification of conventions to access embedded binary data such as clinical images.

The current Australia Diagnostics standard specifies HTML as a possible display segment for use by senders to transmit a display version of the data in the ORU message. The HTML display segment should be the last OBX segment and is identified by a OBX-3 Observation Identifier of "HTML^Display Segment as HTML^AUSPDI". It is possible to send a single OBX segment of this type however it is recommended that the same data is also sent in an atomic format. Currently no guidance is given as to what features the HTML can use and this technical report aims to provide this guidance. The message types such as the Referral Message detailed in AS4700.6 defer to the Diagnostics standard for guidance in this area and the guidance specified in this document is also relevant to these messages on this basis.

The advantages of using HTML as a display segment include:

1. The ability to use proportional fonts and have control of font sizes and weights/colours to enable appropriate emphasis to be given to critical abnormalities in the report. Currently only highlight is supported in HL7 Free Text (FT).
2. Reliable representation of tabular data which otherwise requires the use of spaces with a non-proportional font. The character width is usually assumed to be around 78 characters, but this is not specified or reliably supported and word wrapping of tabular formatted data impacts severely on its readability.
3. The ability to represent a containership hierarchy for highly nested data with appropriate headings
4. The ability to embed images into the report where the image data is in the HL7 messages
5. The ability to include hyperlinks to internal and external information
6. A means of identifying header and footer data such as letterhead information and allowing this to be optionally displayed.
7. Existing standard that is widely supported across operating systems.
8. Good tolerance for displays of variable size and resolution with mechanisms for users to alter display size.
9. The availability of screen readers for disabled users.
10. Freely available validation services
11. Wide availability of tools for authoring content and formatting of display.
12. Text based format that remains searchable and human readable and is small in size.

The disadvantages of HTML include:

1. Limited support in current applications despite being a specified display format for many years.
2. The potential for exploits on the common viewers to be exploited to compromise security.
3. The potential for external links to become obsolete.

Constraints on HTML Profile for display segments

In order to reduce the potential for exploits and reduce the overhead, reliability and longevity of the display segments the following constraints must be followed.

1. No JavaScript

The HTML display must not use any JavaScript whatsoever in the document either as directly embedded JavaScript or script tags in the header. It is suggested that JavaScript processing be turned off in the display.

2. Embedded CSS only

It is recommended that CSS be used for styling the document but that CSS must be directly included in the header of the document and not linked to an external URL. This is important for both longevity and the ability of the document to be styled off line. CSS level 2 [[1]] should be used at this time. Any selectors should work on all the major browsers. (Currently Internet Explorer 6+, Firefox, Chrome and Webkit)

3. HTML 4

While support for HTML 5 is appearing its support is far from universal and content should be compliant with the W3c XHTML 1.0 specification [[2]] XHTML is preferred as it can be parsed with an xml parser.

To improve security and reduce the requirement for end users to have browser extensions installed the only embedded content allowed are images. No applet or object tags are allowed. Multimedia presentations can be included as HL7 ED type OBX segments and the media type used to optionally display content in external viewers. The HTML display segments must be viewable without browser extensions or plugins installed. No <form> or <iframe> tags are allowed.

4. HTML structure

Many display segments include letterhead information and while this is permitted it should be encapsulated in a HTML
and be located outside the scope of the core report data. The core display of the report should be encapsulated in a of HTML class "reportDisplay"
It should be possible for a user to selectively hide everything apart from the div with class of reportDisplay without loosing any clinical information. In that fashion it will be possible for users to toggle the display of the letterhead components of the display segment.

External links to images are permitted in the non "reportDisplay" divs to permit the display of logos but the user or system may refuse to download these images and the display formatting should not be dependent on the image downloading. The core report HTML should display in a readable way with the CSS removed and information in the core report data should not be hidden by CSS formatting directives.

A div with class patientDemographicHeader must be used by senders to include a desired rendering of their current snapshot of patient demographics. Receiving systems must display (on screen and in printouts) the current patient demographics as patient names and demographics can change over time, this ensures that current information is displayed.

An example skeletal structure of the HTML is below:

```
<?xml version="1.0" encoding="us-ascii"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-
strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en"><head>...</head>
<body>
<div>
<div class="sendingAuthorityHeader">Letterhead here</div>
<div class="patientDemographicHeader">Patient demographic header here</div>
<div class="reportDisplay">Clinical content here</div>
<div class="sendingAuthorityFooter>Letterhead footer here</div>
</div>
</body>
</html>
```

5. Internal linking to images

The use of a HTML display segment allows rich formatting of both text and images, but the images are not embedded in the HTML and need to be linked back to the binary image data in the message. The images can be in either ED or RP OBX value type segments. The convention for the URL format is "hl7v2://OBX.<setID (see page 380) >" e.g. if the OBX with a SetID of 4 contains an image the URL would be "hl7v2://OBX.4 (see page 380) ". This will need to be handled on the display control or the URL converted to a file based URL and the OBX data extracted to a file. Images, other than in the letterhead divs, should not be linked to external URLs. It is permissible to provide links to external images in the report body but this should be done with a click-able link that the user has to manually select. These external links may well become invalid with time and their external links should be an adjunct to the report and not the entire report contents.

6. Use ASCII Character Set

To ensure interoperability the HTML text should use the HL7V2 subset of the ASCII character set. Unicode characters should be escaped using the standard HTML escape characters and the resulting HTML file then placed in the OBX segment. If a free text (FT) OBX value type is used then any reserved HL7 delimiters will need to be escaped using HL7 escape conventions and this will include cursor return/Line feed sequences. If a Encapsulated

data (ED) OBX value type is used then the HTML file should be Base 64 encoded and placed in the appropriate ED field. After extraction from the Base 64 encoding a ASCII encoded HTML file should be the result.

A2.4 Example Message

File: FBC-ascii-encoded-html.hl7[98]

ASCII Encoded HTML OBX

```
MSH|^~\&|EQUATORDXTRAY^EQUATORDXTRAY:3.1.2^L|QML^2184^AUSNATA|||20160612150255+1000||ORU^R01|
BGC06121502965-8968|P|2.4^AUS&&ISO3166_1^HL7AU.ONO.1&&HL7AU|||AL|AL|AUS
PID|||12345678^^^^MR~5432109876^^^AUSHIC^MC||ANTHONY^JENNIFER^KAY||19490709|F|||225 Wises
Road^^BUDERIM^QLD^4551||^^^^^^54455055||||||4157269354
PV1|1|O||||||0488077Y^MCKENZIE^RAY^^^DR^^^AUSHICPR^L^^^PRN|0191324T^MCINTYRE^ANDREW^^^DR^^^AUSHICPR^L^^^PRN
ORC|RE||15-57243112-CBC-0^QML^2184^AUSNATA||CM|||||||0488077Y^MCKENZIE^RAY^^^DR^^^AUSHICPR^L^^^PRN
OBR|1||15-57243112-CBC-0^QML^2184^AUSNATA|CBC^MASTER FULL BLOOD COUNT^2184|||20151221|||||||201512211940||
0488077Y^MCKENZIE^RAY^^^DR^^^AUSHICPR^L^^^UPIN||From QML"QMLG4399292.oru" 17.03.2016||DR=UMA2P,LN=15
-57243112,RC=Y||201603171124||HM|F||^^^201512210000|
0488077Y^MCKENZIE^RAY^^^DR^^^AUSHICPR^L^^^UPIN~0191324T^MCINTYRE^ANDREW^^^DR^^^AUSHICPR^L^^^UPIN||||
123457Z&Davidson&David&&MBBS&Dr.
OBX|1|ST|15430-2^^LN||FULL BLOOD EXAMINATION||||||
OBX|2|NM|718-7^Haemoglobin^LN||121|g/L|115-160||||F|||201512212329
OBX|3|NM|789-8^Red Cell Count^LN||3.8|10*12/L|3.6-5.2||||F|||201512212329
OBX|4|NM|4544-3^Haematocrit^LN||0.38||0.33-0.46||||F|||201512212329
OBX|5|NM|787-2^Mean Cell Volume^LN||100|fL|80-98|+|||F|||201512212329
OBX|6|NM|785-6^Mean Cell Haemoglobin^LN||32|pg|27-35||||F|||201512212329
OBX|7|NM|777-3^Platelet Count^LN||393|10*9/L|150-450||||F|||201512212329
OBX|8|NM|6690-2^White Cell Count^LN||8.8|10*9/L|4.0-11.0||||F|||201512212329
OBX|9|NM|770-8^Neutrophils^LN||53|%|||||F|||201512212329
OBX|10|NM|751-8^Neutrophils^LN||4.7|10*9/L|2.0-7.5||||F
OBX|11|NM|736-9^Lymphocytes^LN||30|%|||||F|||201512212329
OBX|12|NM|731-0^Lymphocytes^LN||2.6|10*9/L|1.1-4.0||||F
OBX|13|NM|5905-5^Monocytes^LN||14|%|||||F|||201512212329
OBX|14|NM|742-7^Monocytes^LN||1.2|10*9/L|0.2-1.0|+|||F
OBX|15|NM|713-8^Eosinophils^LN||3|%|||||F|||201512212329
OBX|16|NM|711-2^Eosinophils^LN||0.26|10*9/L|0.04-0.40||||F
OBX|17|NM|706-2^Basophils^LN||0|%|||||F|||201512212329
OBX|18|NM|704-7^Basophils^LN||0.00|10*9/L|< 0.21||||F
OBX|19|FT|5909-7^Interpretation^LN||Comment:\.br\Mild monocytosis and borderline high mean cell volume.
Other significant haematology parameters are within normal limits for age and sex.\.br\^Comment:\.br\Mild
monocytosis and borderline high mean cell volume.  Other significant haematology parameters are within
normal limits for age and sex.\.br\||||||F|||201512212329
OBX|20|ED|HTML^Display format in HTML^AUSPDI||ECLIPSE&ECLIPSE:3.1.4 [win32-i386]&L^text^HTML^A^<?xml
version="1.0" encoding="us-ascii"?>\.br\<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">\.br\<html xmlns="http://www.w3.org/1999/xhtml"
 xml:lang="en"><head><title>MASTER\T\nbsp;FULL\T\nbsp;BLOOD\T\nbsp;COUNT 15-57243112-CBC-0\T\nbsp;(QML)</
title><style type="text/css">.MOR {\.br\  font-family: Tahoma,Verdana,Arial,Helvetica,sans-serif;\.br\}
\.br\\.br\body.MOR {\.br\  /*margin-left: 30px;*/\.br\  background-color:#FFFFFF;\.br\}\.br\\.br\.MOR small
{\.br\  font-size: 0.8em;\.br\}\.br\\.br\.MOR h1 {\.br\  font-size: 2.1em;\.br\}\.br\\.br\.MOR h2 {\.br\
font-size: 1.5em;\.br\}\.br\\.br\.MOR .heading {\.br\     color: rgb(68, 85, 119);\.br\     margin-left:
-20px;\.br\     margin-top: 25px;\.br\     font: bold 12pt;\.br\     background-color: rgb(222,233,243);
\.br\     padding: 5px; \.br\}\.br\\.br\.MOR table.oddcolor {\.br\  background-color: #F0F0FF;\.br\}\.br\
\.br\.MOR td.spacer {\.br\  height: 0.3em;\.br\}\.br\\.br\.MOR td {\.br\  padding: 2px}\.br\\.br\.MOR
```

98 https://confluence.hl7australia.com/download/attachments/1278289/FBC-ascii-encoded-html.hl7?api=v2&modificationDate=1481528605000&version=1

```
td.dataheading {\.br\  font-weight: bold;\.br\  vertical-align: top;\.br\}\.br\\.br\.MOR td.dataitems
{\.br\  font-weight:normal;\.br\  font-size: 0.8em;\.br\  color: blue;\.br\}\.br\\.br\.MOR td.cluster
{\.br\  font-weight: bold;\.br\}\.br\\.br\.MOR td.entry{\.br\font-weight: bold;\.br\color: blue;\.br\}\.br\
\.br\.MOR td.itemtree{\.br\color: blue;\.br\}\.br\\.br\.MOR td.snomed{\.br\color: blue;\.br\font-weight:
bold;\.br\}\.br\.MOR TD.IN1 {\.br\  border-left: 5px solid white;\.br\  padding-left: 3px;\.br\}\.br\
\.br\.MOR TD.IN2 {\.br\  border-left: 15px solid white;\.br\  padding-left: 3px;\.br\}\.br\\.br\.MOR TD.IN3
{\.br\  border-left: 25px solid white;\.br\  padding-left: 3px;\.br\}\.br\\.br\.MOR TD.IN4 {\.br\  border-
left: 35px solid white;\.br\  padding-left: 3px;\.br\}\.br\\.br\.MOR TD.IN5 {\.br\  border-left: 45px solid
white;\.br\  padding-left: 3px;\.br\}\.br\\.br\.MOR TD.IN6 {\.br\  border-left: 55px solid white;\.br\
padding-left: 3px;\.br\}\.br\\.br\.MOR TD.IN7 {\.br\  border-left: 65px solid white;\.br\  padding-left:
3px;\.br\}\.br\\.br\.MOR TD.IN8 {\.br\  border-left: 75px solid white;\.br\  padding-left: 3px;\.br\}\.br\
\.br\.MOR TD.IN9 {\.br\  border-left: 85px solid white;\.br\  padding-left: 3px;\.br\}\.br\\.br\.MOR
TD.IN10 {\.br\  border-left: 95px solid white;\.br\  padding-left: 3px;\.br\}\.br\.MOR tr.Indent{\.br\
padding-left: 10%\.br\}\.br\\.br\.MOR th {\.br\  padding: 0.35em;\.br\  font-weight: bold;\.br\  vertical-
align: bottom;\.br\  text-align: left;\.br\}\.br\\.br\.MOR th.underline {\.br\  border-bottom: 1px solid
black;\.br\}\.br\\.br\.MOR tr.Header{\.br\  background-color: silver;\.br\}\.br\\.br\.MOR tr.odd {\.br\
background-color: #F0F0FF;\.br\}\.br\\.br\.MOR tr.even {\.br\  background-color: #FFFFFF;\.br\}\.br\
\.br\.MOR tr.modified {\.br\background-color: #FFC0CB;\.br\}\.br\\.br\.MOR tr.oddFT{\.br\  background-
color: #F0F0FF;\.br\\.br\  font-family: Consolas,Tahoma,Verdana,Arial,Helvetica,sans-seri\.br\f;\.br\}\.br\
\.br\.MOR tr.evenFT {\.br\  background-color: #FFFFFF;\.br\\.br\  font-family:
Consolas,Tahoma,Verdana,Arial,Helvetica\.br\,sans-serif;\.br\}\.br\\.br\.MOR tr.modifiedFT{\.br\
background-color: #FFC0CB;\.br\\.br\  font-family: Consolas,Tahoma,Verdana,Arial,Helvetica\.br\,sans-serif;
\.br\}\.br\\.br\.MOR td.oddLatestResult{\.br\  background-color: #ebebeb;\.br\}\.br\\.br\.MOR
td.evenLatestResult{\.br\  background-color: #ebebeb;\.br\}\.br\\.br\.MOR b, .MOR strong {\.br\  font-
weight: bold; /*NS4 fix*/\.br\}\.br\\.br\.MOR a {\.br\  text-decoration: none;\.br\  color: blue;\.br\}
\.br\\.br\.MOR a:hover {\.br\  color: red;\.br\}\.br\\.br\.MOR .deceased a:hover {\.br\  color: #FFFFFF;
\.br\}\.br\\.br\.MOR a.hint {\.br\  text-decoration: none;\.br\  color: blue;\.br\}\.br\\.br\.MOR a.Action
{\.br\  font-weight: bold;\.br\}\.br\\.br\.MOR a.reporttitle{\.br\  color: #000000;\.br\  font-size: 0.5em;
\.br\  font-weight: normal;\.br\}\.br\\.br\.MOR a.smallaction{\.br\  font-weight: normal;\.br\}\.br\
\.br\.MOR div.actions {\.br\  font-weight: bold;\.br\  margin-top: 0.72em;\.br\  margin-bottom: 0.72em;
\.br\}\.br\\.br\.MOR div.actions a {\.br\  text-decoration: none;\.br\  color: blue;\.br\}\.br\\.br\.MOR
div .actions table td {\.br\  vertical-align: text-top;\.br\}\.br\\.br\.MOR blockquote {\.br\  background-
color: #EEEEEE;\.br\  padding: 0.5em 2%;\.br\}\.br\\.br\.MOR .copyright {\.br\  font-family: Arial;\.br\
color: #000000;\.br\  font-size: 0.8em;\.br\}\.br\\.br\.MOR .smalldate {\.br\  font-family: Arial;\.br\
font-size: 0.8em;\.br\}\.br\\.br\.MOR .dropcap {\.br\  font-size: 1.8em;\.br\  font-weight: bold;\.br\
float: left;\.br\  margin-top: 0;\.br\  padding: 0%;\.br\  border: 1px solid #888888;\.br\  background-
color: #EEEEEE;\.br\}\.br\\.br\.MOR .headingfont {\.br\  font-size: 2.2em;\.br\  font-weight: bold;\.br\}
\.br\\.br\.MOR .freeText {\.br\  padding: 0.5em 2%;\.br\\.br\  font-family: Consolas,"Courier
New",Courier,monospac\.br\e;\.br\  font-size: 1.1em;\.br\}\.br\\.br\.MOR .highlightText {\.br\  font-
weight: bold;\.br\}\.br\\.br\.MOR .resultsHeader {\.br\  font-weight: bold;\.br\}\.br\
\.br\.MOR .resultsHeaderAlert {\.br\  font-weight: bold;\.br\  color: red;\.br\}\.br\
\.br\.MOR .smallresultsHeader {\.br\  font-weight: bold;\.br\  border-bottom: 1px solid black;\.br\  font-
size:  1em;\.br\}\.br\\.br\.MOR .resultsHeaderContainer {\.br\  font-weight: bold;\.br\  border-bottom: 1px
solid black;\.br\  width: 850px;\.br\}\.br\\.br\.MOR .resultsHeaderContainer img{\.br\  border: none;\.br\}
\.br\\.br\.MOR .resultsAlternateView {\.br\  font-weight: normal;\.br\}\.br\.MOR .CodedValue {\.br\  color:
black;\.br\  font-weight: 600;\.br\}\.br\\.br\.MOR .SnomedParent {\.br\  font-weight: bold;\.br\  color:
blue;  \.br\}\.br\\.br\.MOR tr.SUBID1{\.br\  background-color: #FFF0F0;\.br\}\.br\\.br\.MOR tr.SUBID2{\.br\
background-color: #F0FFFF;\.br\}\.br\\.br\.MOR tr.SUBID3{\.br\  background-color: #FFFFF0;\.br\}\.br\
\.br\.MOR tr.SUBID4{\.br\  background-color: #F0F0F0;\.br\}\.br\\.br\\.br\.MOR tr.SUBID5{\.br\  background-
color: #FAFAFA;\.br\}\.br\\.br\.MOR tr.SUBID6{\.br\  background-color: #CCCCCC;\.br\}\.br\
\.br\td.NHS_PB_Name {\.br\        font-family: Consolas;\.br\        font-weight: bold;\.br\        font-
size: 13pt;\.br\        border-left: thin solid Gray;\.br\        border-top-color: Gray;\.br\
border-top-style: solid;\.br\        border-width: 1px;\.br\        border-top-width: 1px;\.br\
padding-top: 15px;\.br\        padding-bottom: 15px;\.br\        background: url(NHS_2BlueBarMenuPic.png);
\.br\\.br\}\.br\\.br\td.NHS_PB_Other {\.br\        font-family: Consolas;\.br\        font-weight: bold;
\.br\        font-size: 12pt;\.br\        border-top-color: Gray;\.br\        border-top-style: solid;\.br\
border-top: 1px solid Gray;\.br\        background: url(NHS_2BlueBarMenuPic.png);\.br\        }\.br\
\.br\td.NHS_PB_Detail{\.br\        font-family: Consolas;\.br\        font-weight: bold;\.br\        font-
```

```
size: 10pt;\.br\        border-top-color: Gray;\.br\        border-top-style: solid;\.br\        border-
top: 1px solid Gray;\.br\        }\.br\\.br\td.NHS_PB_Right {\.br\        font-family: Consolas;\.br\
font-weight: bold;\.br\        font-size: 12pt;\.br\        border-top-color: Gray;\.br\        border-top-
style: solid;\.br\        border-top: 1px solid Gray;\.br\        border-right-color: Gray;\.br\
border-right-style: solid;\.br\        border-right-width: 1px;\.br\        font-weight: bold;\.br\
background: url(NHS_2BlueBarMenuPic.png);\.br\        }\.br\\.br\table.NHS_PB {\.br\        width: 750px;
\.br\        border-collapse: collapse;\.br\        font-family: Consolas;\.br\        font-size: medium;
\.br\}\.br\\.br\tr.NHS_Detailsbar {\.br\        background: Gray url(SilverBar.png);\.br\}
\.br\tr.NHS_PB_Main {\.br\        border-left: 1px solid Gray;\.br\        border-left-width: 1px;\.br\
border-right: 1px solid Gray;\.br\        border-top: 1px solid Gray;\.br\}\.br\\.br\.NHS_PB_Label {\.br\
text-align: left;\.br\        font-family: Consolas;\.br\        font-size: 10pt;\.br\        font-weight:
normal;\.br\        font-style: italic;\.br\        vertical-align: middle;\.br\        border-top-width:
1px;\.br\        border-right-width: 2px;\.br\        border-bottom-width: 1px;\.br\        border-left-
width: 1px;\.br\        vertical-align: middle;\.br\}\.br\\.br\td.RDTHeader {\.br\        font-family:
arial,helvetica,clean,sans-serif;\.br\        font-weight: normal;\.br\        font-size: 12pt;\.br\
color: white;\.br\        border-right: 1px solid silver;\.br\        background: blue;\.br\        }\.br\
\.br\.MOR a.RDTSort{\.br\        text-decoration: none;\.br\        font-weight: bold;\.br\        font-
size: 10pt;\.br\        color: white;\.br\        }\.br\\.br\.MOR div.window{\.br\  overflow: auto;\.br\
background-color: #eeefff;\.br\  border: solid #0066aa 2px;\.br\  margin: 8px;\.br\  padding: 0px;\.br\
width: 250px;\.br\  position: absolute;\.br\  left: 170px;\.br\  top: 320px;\.br\  height: 100px;\.br\}
\.br\\.br\.MOR div.titlebar{\.br\  background-color: #0066aa;\.br\  background-image: url(titlebar_bg.png);
\.br\  color:white;\.br\  border-bottom: solid black 1px;\.br\  width: 100%;\.br\  position: absolute;\.br\
height: 16px;\.br\  overflow:hidden;\.br\}\.br\\.br\.ageUnder18 {\.br\  background-color: #ff0000;\.br\
color: white;\.br\  font-weight: bold;\.br\}\.br\\.br\div.MimsHeader{\.br\  position:Fixed;\.br\  text-
align:right;\.br\  width: 98%;\.br\  margin:0 auto;\.br\  height:10px;\.br\  border:0px solid black;\.br\}
\.br\\.br\\.br\\.br\.pull-right {\.br\float: right;\.br\}\.br\.pull-left { \.br\  float: left;\.br\}\.br\/
*Patient Banner*/\.br\.patientBanner {\.br\  color: white;\.br\  background-color: #3b8ace;\.br\  border-
collapse: collapse;\.br\  border-bottom: none;\.br\  margin-bottom: 10px;\.br\}\.br\.patientBanner th
{\.br\  padding-top: 8px;\.br\  padding-left: 10px;\.br\  padding-bottom: 8px;\.br\  border-right: 1px
solid #3b8ace;\.br\  border-left: 1px solid #3b8ace;\.br\}\.br\.patientName {\.br\  font-size: 1.28em;\.br\
text-align: left;\.br\  width: 70%;\.br\}\.br\.patientName a{\.br\  color: white;\.br\  text-decoration:
none;\.br\}\.br\.patientBanner .demographicsLabel {\.br\    font-size:0.8em;\.br\    text-align: right;
\.br\    vertical-align: top;\.br\}\.br\.patientInfo {\.br\  background-color: #fff;\.br\  font-weight: 600
;\.br\}\.br\.patientInfo td {\.br\    padding-top: 3px;\.br\    padding-bottom: 3px;\.br\    padding-left:
5px;\.br\    padding-right: 5px;\.br\    border-top: 1px solid lightgray;\.br\    border-bottom: 1px solid
lightgray;\.br\    border-left: 1px solid lightgray;\.br\    border-right: 1px solid lightgray;\.br\
color: #444;\.br\    background-color:#fcfcfc;\.br\    font-size: 0.8em;\.br\}\.br\.buttons {\.br\    text-
align: center;\.br\    line-height: 110%;\.br\}\.br\.buttons td {\.br\    display: inline-block;\.br\
height: 100%;\.br\    width: 100%;\.br\    margin-bottom: 0.5em;\.br\    padding-top: .6em;\.br\
padding-bottom: .6em;\.br\    padding-left: 10px;\.br\    padding-right: 10px;\.br\    color: #000;\.br\
background-color: #fafafa;\.br\    border-radius: 5px;\.br\    border: solid #cccccc 1px;\.br\
border-right: solid #bbb 2px;\.br\        border-bottom: solid #bbb 2px;\.br\}\.br\.buttons a.Action {\.br\
font-weight: 100;\.br\        color:#444;\.br\        font-size: 0.8em;\.br\}\.br\.reportContainerList
{\.br\    width: 960px;\.br\}\.br\.reportContainerList .vmractions{\.br\    width: 100px;\.br\    float:
right;\.br\}\.br\.italicLabel{\.br\    font-weight: 100;\.br\    font-style: italic;\.br\}
\.br\.patientInfo .italicLabel {\.br\    color: #777;\.br\}\.br\.patientBannerZone1 {\.br\  /*border: 1px
solid #086098;*/\.br\  border: none;\.br\  padding: 10px;\.br\  font-size: 1em;\.br\}
\.br\.patientBannerZone2 {\.br\  border: 1px solid #ccc;\.br\  border-top: none;\.br\  background-color:
#f3f3f3;\.br\  color: #666;\.br\  font-size: 0.8em;\.br\  padding: 4px;\.br\}\.br\.tableTitle h4 {\.br\
margin-bottom: 5px;\.br\ }\.br\.wp-table {\.br\  background-color: #f3f3f3;\.br\  margin-left: auto;\.br\
margin-right: auto;\.br\  margin-bottom: 10px;\.br\  width: 850px;\.br\  border-spacing: 0px;\.br\}
\.br\.wp-table .resultsHeaderContainer {\.br\  font-weight: bold;\.br\  background-color: #fefefe;\.br\
border-bottom: none;\.br\  border-right: none;\.br\  width: 850px;\.br\  padding-top: 8px;\.br\}\.br\
\.br\.wp-table th {\.br\  border: 1px solid #ccc;\.br\  background-color: #eee;\.br\  font-size: 11px;\.br\
font-weight: bold;\.br\  color: #444;\.br\  border-left: none;\.br\  text-align: center;\.br\  padding: 2px
10px 2px 10px;\.br\ }\.br\.wp-table th.first-cell {\.br\  border-left: 1px solid #ccc;\.br\}\.br\ .wp-table
td {\.br\  padding: 5px;\.br\  font-size: 11px;\.br\  color: #000;\.br\  border-left: none;\.br\  border-
bottom: 1px solid #ccc;\.br\  border-top: none;\.br\  border-right: 1px solid #ccc;\.br\}\.br\.wp-table
```

```
td.first-cell {\.br\  border-left: 1px solid #ccc;\.br\}\.br\.wp-table td.NoDataRecorded {\.br\  border-
left: 1px solid #ccc;\.br\  color: #777;\.br\  font-weight: bold;\.br\  font-style: italic;\.br\}\.br\/
*Medications*/\.br\.meds-dose-label {\.br\  color: #1d73be;\.br\  font-style: italic;\.br\}\.br\ .meds-
status {\.br\  font-weight: bold;\.br\}\.br\.meds-reason {\.br\  font-style: italic;\.br\ }</style></
head><body class="MOR"><div class="sendingAuthorityHeader"> <div class="patientHeader"><table
class="patientBanner" width="850"><tbody><tr><th colspan="7" class="patientName" width="595"><span
class="highlightText"><a href="action=PIDDetails\T\amp;hint=Click+here+to+show+patient+details.">JENNIFER
KAY ANTHONY</a></span></th><th colspan="5" class="demographicsLabel"><span class="italicLabel">Born\T\nbsp;
\T\nbsp;</span>09-Jul-1949\T\nbsp;(67y)\T\nbsp;\T\nbsp;<span class="italicLabel">Gender\T\nbsp;\T\nbsp;</
span>Female</th></tr><tr class="patientInfo"><td colspan="7"><span class="italicLabel">Address\T\nbsp;
\T\nbsp;</span>225\T\nbsp;Wises\T\nbsp;Road\T\nbsp;BUDERIM\T\nbsp;QLD\T\nbsp;4551</td><td><span
class="italicLabel">Phone\T\nbsp;\T\nbsp;</span></td><td colspan="4"><span class="italicLabel">Medicare No
\T\nbsp;</span></td></tr><tr class="patientInfo"><td colspan="3"><span class="italicLabel">Specimen<br/></
span>\T\nbsp;</td><td colspan="3"><span class="italicLabel">Lab No<br/></span><a
href="action=OrderByLabNumber\T\amp;LabNumber=15-57243112-\T\amp;hint=Click+here+to+show+order+details.">15
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REW\T\nbsp;MCINTYRE</a></td></tr></tbody></table></div></div><div class="reportContainerList"><div
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 align="left">FULL\T\nbsp;BLOOD\T\nbsp;EXAMINATION</td><td style="font-weight: bold">\T\nbsp;</
td><td>\T\nbsp;</td><td>\T\nbsp;</td><td>\T\nbsp;</td></tr><tr><td> </td><td> </td><td class="dataheading"> </td><td
class="dataheading">Reference</td><td class="dataheading">Units</td></tr><tr class="even"><td>Haemoglobin</
td><td align="right">121</td><td style="font-weight: bold">\T\nbsp;</td><td>(115-160)</td><td>g/L</td></
tr><tr class="odd"><td>Red\T\nbsp;Cell\T\nbsp;Count</td><td align="right">3.8</td><td style="font-weight:
bold">\T\nbsp;</td><td>(3.6-5.2)</td><td>10*12/L</td></tr><tr class="even"><td>Haematocrit</td><td
align="right">0.38</td><td style="font-weight: bold">\T\nbsp;</td><td>(0.33-0.46)</td><td>\T\nbsp;</td></
tr><tr class="odd"><td>Mean\T\nbsp;Cell\T\nbsp;Volume</td><td align="right" style="font-weight: bold">100</
td><td style="font-weight: bold">H</td><td>(80-98)</td><td>fL</td></tr><tr
class="even"><td>Mean\T\nbsp;Cell\T\nbsp;Haemoglobin</td><td align="right">32</td><td style="font-weight:
bold">\T\nbsp;</td><td>(27-35)</td><td>pg</td></tr><tr class="odd"><td>Platelet\T\nbsp;Count</td><td
align="right">393</td><td style="font-weight: bold">\T\nbsp;</td><td>(150-450)</td><td>10*9/L</td></tr><tr
class="even"><td>White\T\nbsp;Cell\T\nbsp;Count</td><td align="right">8.8</td><td style="font-weight:
bold">\T\nbsp;</td><td>(4.0-11.0)</td><td>10*9/L</td></tr><tr class="odd"><td>Neutrophils</td><td
align="right">4.7(53\T\nbsp;%)</td><td style="font-weight: bold">\T\nbsp;</td><td>(2.0-7.5)</td><td>10*9/
L</td></tr><tr class="even"><td>Lymphocytes</td><td align="right">2.6(30\T\nbsp;%)</td><td style="font-
weight: bold">\T\nbsp;</td><td>(1.1-4.0)</td><td>10*9/L</td></tr><tr class="odd"><td>Monocytes</td><td
align="right" style="font-weight: bold">1.2(14\T\nbsp;%)</td><td style="font-weight: bold">H</td><td>(0.2
-1.0)</td><td>10*9/L</td></tr><tr class="even"><td>Eosinophils</td><td align="right">0.26(3\T\nbsp;%)</
td><td style="font-weight: bold">\T\nbsp;</td><td>(0.04-0.40)</td><td>10*9/L</td></tr><tr
class="odd"><td>Basophils</td><td align="right">0.00(0\T\nbsp;%)</td><td style="font-weight:
bold">\T\nbsp;</td><td>(\T\lt;0.21)</td><td>10*9/L</td></tr><tr class="evenFT"><td class="freeText"
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>Mild\T\nbsp;monocytosis\T\nbsp;and\T\nbsp;borderline\T\nbsp;high\T\nbsp;mean\T\nbsp;cell\T\nbsp;volume.
\T\nbsp;\T\nbsp;Other\T\nbsp;significant\T\nbsp;<br />
>haematology\T\nbsp;parameters\T\nbsp;are\T\nbsp;within\T\nbsp;normal\T\nbsp;limits\T\nbsp;for\T\nbsp;age\T
\nbsp;and\T\nbsp;sex.<br /></td></tr></table></div></div></div></div><div
class="sendingAuthorityFooter"><p><small><span>Enquiries:\T\nbsp;</span><span>Dr.
```

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\T\nbsp;David\T\nbsp;Davidson\T\nbsp;MBBS</span></small><span>\T\nbsp;\T\nbsp;\T\nbsp;\T\nbsp;</
span><small><span>Service\T\nbsp;Provider:\T\nbsp;</span><span>QML</span></small><br /><br /
><small>From\T\nbsp;QML\T\quot;QMLG4399292.oru\T\quot;\T\nbsp;17.03.2016</small></p></div></body></
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OBX|3|NM|789-8^Red Cell Count^LN||3.8|10*12/L|3.6-5.2||||F|||201512212329
OBX|4|NM|4544-3^Haematocrit^LN||0.38||0.33-0.46||||F|||201512212329
OBX|5|NM|787-2^Mean Cell Volume^LN||100|fL|80-98|+|||F|||201512212329
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OBX|8|NM|6690-2^White Cell Count^LN||8.8|10*9/L|4.0-11.0||||F|||201512212329
OBX|9|NM|770-8^Neutrophils^LN||53|%|||||F|||201512212329
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OBX|19|FT|5909-7^Interpretation^LN||Comment:\.br\Mild monocytosis and borderline high mean cell volume.
Other significant haematology parameters are within normal limits for age and sex.\.br\^Comment:\.br\Mild
monocytosis and borderline high mean cell volume.  Other significant haematology parameters are within
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YW4+PC90ZD48dGQgY29sc3Bhbj0iNCI+PHNwYW4gY2xhc3M9Iml0YWxpY0xhYmVsIj5NZWRpY2FyZSBObyAmbmJzcDs8L3NwYW4+PC90ZD4
8L3RyPjx0ciBjbGFzcz0icGF0aWVudEluZm8iPjx0ZCBjb2xzcGFuPSIzIj48c3BhbiBjbGFzcz0iaXRhbGljTGFiZWwiPlNwZWNpbWVuPG
JyLz48L3NwYW4+Jm5ic3A7PC90ZD48dGQgY29sc3Bhbj0iMyI+PHNwYW4gY2xhc3M9Iml0YWxpY0xhYmVsIj5MYWIgTm88YnIvPjwvc3Bhb
j48YSBocmVmPSJhY3Rpb249T3JkZXJCeUxhYk51bWJlciZhbXA7TGFiTnVtYmVyPTE1LTU3MjQzMTEyLSZhbXA7aGludD1DbGljaytoZXJl
K3RvK3Nob3crb3JkZXIrZGV0YWlscy4iPjE1LTU3MjQzMTEyPC9hPjwvdGQ+PHRkIGNvbHNwYW49IjIiPjxzcGFuIGNsYXNzPSJpdGFsaWN
MYWJlbCI+UmVxdWVzdCBEYXRlPGJyLz48L3NwYW4+MjEvMTIvMjAxNSZuYnNwOzEyOjAwJm5ic3A7QU08L3RkPjx0ZCBjb2xzcGFuPSIyIj
48c3BhbiBjbGFzcz0iaXRhbGljTGFiZWwiPkVmZmVjdGl2ZSBEYXRlPGJyLz48L3NwYW4+MjEvMTIvMjAxNTwvdGQ+PHRkIGNvbHNwYW49I
jIiPjxzcGFuIGNsYXNzPSJpdGFsaWNMYWJlbCI+R2VuZXJhdGVkIERhdGU8YnIvPjwvc3Bhbj4xNy8wMy8yMDE2Jm5ic3A7MTE6MjQmbmJz
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SZXF1ZXN0ZWQgQnk8YnIvPjwvc3Bhbj48YSBocmVmPSJhY3Rpb249TG9va3VwU1RGJmFtcDtoaW50PVNob3crZGV0YWlscytmb3IrcHJvdm
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NQ0lOVFlSRTwvYT48L3RkPjwvdHI+PC90Ym9keT48L3RhYmxlPjwvZGl2PjwvZGl2PjxkaXYgY2xhc3M9InJlcG9ydENvbnRhaW5lckxpc3
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SI4NTAiIHN0eWxlPSJib3JkZXItc3BhY2luZzogMHB4OyIgY2VsbHNwYWNpbmc9IjAiPjx0cj48dGQgY2xhc3M9InJlc3VsdHNIZWFkZXIi
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BhY2luZzogMHB4OyIgY2VsbHNwYWNpbmc9IjAiPjx0ciBjbGFzcz0ib2RkIj48dGQgY29sc3Bhbj0iMiIgYWxpZ249ImxlZnQiPkZVTEwmb
mJzcDtCTE9PRCZuYnNwO0VYQU1JTkFUSU9OPC90ZD48dGQgc3R5bGU9ImZvbnQtd2VpZ2h0OiBib2xkIj4mbmJzcDs8L3RkPjx0ZD4mbmJz
cDs8L3RkPjx0ZD4mbmJzcDs8L3RkPjwvdHI+PHRyPjx0ZD4gPC90ZD48dGQ+IDwvdGQ+PHRkIGNsYXNzPSJkYXRhaGVhZGluZyI+IDwvdGQ
+PHRkIGNsYXNzPSJkYXRhaGVhZGluZyI+UmVmZXJlbmNlPC90ZD48dGQgY2xhc3M9ImRhdGFoZWFkaW5nIj5Vbml0czwvdGQ+PC90cj48dH
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L3RkPjx0ZCBhbGlnbj0icmlnaHQiPjM5MzwvdGQ+PHRkIHN0eWxlPSJmb250LXdlaWdodDogYm9sZCI+Jm5ic3A7PC90ZD48dGQ+KDE1MC0
0NTApPC90ZD48dGQ+MTAqOS9MPC90ZD48L3RyPjx0ciBjbGFzcz0iZXZlbiI+PHRkPldoaXRlJm5ic3A7Q2VsbCZuYnNwO0NvdW50PC90ZD
48dGQgYWxpZ249InJpZ2h0Ij44Ljg8L3RkPjx0ZCBzdHlsZT0iZm9udC13ZWlnaHQ6IGJvbGQiPiZuYnNwOzwvdGQ+PHRkPig0LjAtMTEuM
Ck8L3RkPjx0ZD4xMCo5L0w8L3RkPjwvdHI+PHRyIGNsYXNzPSJvZGQiPjx0ZD5OZXV0cm9waGlsczwvdGQ+PHRkIGFsaWduPSJyaWdodCI+
NC43KDUzJm5ic3A7JSk8L3RkPjx0ZCBzdHlsZT0iZm9udC13ZWlnaHQ6IGJvbGQiPiZuYnNwOzwvdGQ+PHRkPigyLjAtNy41KTwvdGQ+PHR
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DwvdGQ+PC90cj48dHIgY2xhc3M9Im9kZCI+PHRkPk1vbm9jeXRlczwvdGQ+PHRkIGFsaWduPSJyaWdodCIgc3R5bGU9ImZvbnQtd2VpZ2h0
OiBib2xkIj4xLjIoMTQmbmJzcDslKTwvdGQ+PHRkIHN0eWxlPSJmb250LXdlaWdodDogYm9sZCI+SDwvdGQ+PHRkPigwLjItMS4wKTwvdGQ
+PHRkPjEwKjkvTDwvdGQ+PC90cj48dHIgY2xhc3M9ImV2ZW4iPjx0ZD5Fb3Npbm9waGlsczwvdGQ+PHRkIGFsaWduPSJyaWdodCI+MC4yNi
gzJm5ic3A7JSk8L3RkPjx0ZCBzdHlsZT0iZm9udC13ZWlnaHQ6IGJvbGQiPiZuYnNwOzwvdGQ+PHRkPigwLjA0LTAuNDApPC90ZD48dGQ+M
TAqOS9MPC90ZD48L3RyPjx0ciBjbGFzcz0ib2RkIj48dGQ+QmFzb3BoaWxzPC90ZD48dGQgYWxpZ249InJpZ2h0Ij4wLjAwKDAmbmJzcDsl
KTwvdGQ+PHRkIHN0eWxlPSJmb250LXdlaWdodDogYm9sZCI+Jm5ic3A7PC90ZD48dGQ+KCZsdDswLjIxKTwvdGQ+PHRkPjEwKjkvTDwvdGQ
+PC90cj48dHIgY2xhc3M9ImV2ZW5GVCI+PHRkIGNsYXNzPSJmcmVlVGV4dCIgY29sc3Bhbj0iNiI+Q29tbWVudDo8YnIgLz5NaWxkJm5ic3
A7bW9ub2N5dG9zaXMmbmJzcDthbmQmbmJzcDtib3JkZXJsaW5lJm5ic3A7aGlnaCZuYnNwO21lYW4mbmJzcDtjZWxsJm5ic3A7dm9sdW1lL
iZuYnNwOyZuYnNwO090aGVyJm5ic3A7c2lnbmlmaWNhbnQmbmJzcDs8YnIgLz5oYWVtYXRvbG9neSZuYnNwO3BhcmFtZXRlcnMmbmJzcDth
cmUmbmJzcDt3aXRoaW4mbmJzcDtub3JtYWwmbmJzcDtsaW1pdHMmbmJzcDtmb3ImbmJzcDthZ2UmbmJzcDthbmQmbmJzcDtzZXguPGJyIC8
+PC90ZD48L3RyPjwvdGFibGU+PC9kaXY+PC9kaXY+PC9kaXY+PC9kaXY+PGRpdiBjbGFzcz0ic2VuZGluZ0F1dGhvcml0eUZvb3RlciI+PH

```
A+PHNtYWxsPjxzcGFuPkVucXVpcmllczombmJzcDs8L3NwYW4+PHNwYW4+RHIuJm5ic3A7RGF2aWQmbmJzcDtEYXZpZHNvbiZuYnNwO01CQ
lM8L3NwYW4+PC9zbWFsbD48c3Bhbj4mbmJzcDsmbmJzcDsmbmJzcDsmbmJzcDs8L3NwYW4+PHNtYWxsPjxzcGFuPlNlcnZpY2UmbmJzcDtQ
cm92aWRlcjombmJzcDs8L3NwYW4+PHNwYW4+UU1MPC9zcGFuPjwvc21hbGw+PGJyIC8+PGJyIC8+PHNtYWxsPkZyb20mbmJzcDtRTUwmcXV
vdDtRTUxHNDM5OTI5Mi5vcnUmcXVvdDsmbmJzcDsxNy4wMy4yMDE2PC9zbWFsbD48L3A+PC9kaXY+PC9ib2R5PjwvaHRtbD4=||||||F
```

A2.5 Use of PDF as display segments

A2.5.1 Overview

PDF stands for Portable Document Format and was developed by Adobe Systems. The specification is available from Adobe (http://www.adobe.com/devnet/pdf/pdf_reference.html) or from ISO (http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51502).

With more pathology reports being viewed by clinicians and consumers via messaging from pathology providers, portals and viewing of health records, PDF provides the confidence to the pathology providers that their report will be viewed in it's entirety and will not be viewed out of context. Pathology providers are very concerned that only a small component of their report will be made viewable and hence the result may be taken out of context of the whole report. PDF retains the content and layout the pathology provider intended.

A2.5.2 Example Message Segment

```
OBX|4|ED|PDF^^AUSPDI||
^application^pdf^Base64^VGhpcyBpcyBiYXNlNjQgY29udGVudCB0aGF0IGlzIHVzZWQgaW4gdGhpcyBkZW1vbnN0cmF0aW9uIHBkZiB
yZXBvcnQu||||||F
```

A2.6 Image Display and link displays

Although HL7 V2.4 supports the transmission of images and links in OBX segments, receiving systems are generally not capable of processing them and hence the retention of the fax machine.

The following implementation notes will improve interoperability:

Image format type	Recommended support	Notes
JPEG (lossless)	Support encouraged	
PNG (lossless)	Support encouraged	
TIFF (lossless)	Support optional	Optional support is due to requirement of multi-page support. Multi-page TIFF images should only be transmitted following site specific negotiations.

Notes:

1. The ED datatype supports images in OBX segments.
2. Web hyperlinks should optionally be implemented using the RP datatype.
3. Receivers must be able to access web references and the ongoing availability of the data should be considered.

4. For pathology data retention refer to the NPAAC guidelines.

Appendix 3 Common Errors (Informative)

Common User Errors

SN (Structured Numeric) datatype misuse

Users sometimes don't structure structured numerics according to the SN datatype specifications, which uses a number of components to represent numerical values and ranges.

Common errors are:-

Meaning	Correct use of SN	Incorrect SN	Incorrect SN
<5	<^5	<5	< 5
5	^5	5	+5
2.4 to 2.8	-^2.4^2.8	2.4-2.8	2.4 - 2.8

CE (Coded Entry) datatype misuse

There are several common misuses of the CE datatype which at minimum should have either an identifier+codesystem pair or a text description. If an identifier is supplied, then it should be accompanied by a code for the code system so that the receiving system can interpret the identifier correctly. For fields where an HL7 table has been specified in the standard, then that table should be considered the default valueset for that field.

For labelling observations (OBX-3), a LOINC identifier is often used. Some implementers routinely auto populate the CE.3 component with "LN" for LOINC, even when the identifier used for the value is clearly not a LOINC code. e.g. "|REPORT^Imaging Report^LN|". In such cases, a "L" should be used to denote a Local code system.

OBR-24 Diagnostic Service Section missing

OBR-24 (see page 225) is used as a coarse level categorisation of report type - e.g. Microbiology vs Anatomical Pathology. Some laboratories still fail to provide this field correctly. The content of the field is often used by receivers or intermediaries to filter or route messages to the correct processing units. See HL7 Table 0074 (see page 225) for correct list of the allowed values.

Symbols and non-standard characters

By default, an HL7 message should only contain 7-bit ASCII printable characters (and the <CR> end-of-line character for separating segments). Some implementations fail to observe this, and send 8-bit characters or 7-bit non-printing characters, without correctly specifying the character set in MSH-18. See also HL7 Ambiguities below.

Incorrect HL7 reserved character escaping

This common problem occurs when one of the reserved HL7 field repeat, field, component or subcomponent separators is not properly replaced in the message by the appropriate escape sequence. This particularly occurs in ORU messages for '&', and '^' and '~' characters.

Null values

HL7 v2 supports 3 states for every field - populated, not-populated and null. Null is represented by and empty pair of double quotes "" and should rarely be used. See http://www.healthintersections.com.au/?p=1807 for guidance. Many implementations incorrectly use null ("") values, sometimes even as a dummy empty value for Required fields.

Incorrect ISO+ or UCUM units

Units are commonly supplied for numeric values in OBX-6. This field is a CE datatype, but very often only the first component i.e. the unit code is sent in HL7 messages. By default, this code should be an ISO+ code. HL7 Australia and the Royal College of Pathologists Australasia's PITUS project recommend using UCUM as the preferred system for units, in which case, all three CE components should be supplied. The following table shows commonly miscoded units and their correct form. The first component (CE.1) only is shown.

System	Correct	Incorrect	Incorrect	Incorrect
ISO+	mL/min/1.73m2	mL/min/1.73 m2		
UCUM	mL/min/{1.73_m2} or ml/min/{1.73_m2}	mL/min/1.73 m2	mL/min/1.73m2	mL/min/{1.73 m2}
ISO+ or UCUM	10*6	10^6	x10*6	10\S\6
UCUM	24.h	24h	24hr	
ISO+ or UCUM	m2	m^2	m*2	m\S\2
UCUM	10.kg	10kg	10.0kg	10Kg
UCUM	mm[Hg]	mmHg	mm{Hg}	
UCUM	umol/(24.h)	umol/24.h	umol/24hr	µmol/24hr
UCUM	10*6.[CFU]/L	10*6[CFU]/L	10*6CFU/L	

Unique IDs

Some implementations fail to observe rules about uniqueness of Identifiers.

In some implementations duplicate MSH message IDs (MSH-10) are used for the same report to multiple “copy to” doctors. This is contrary to the standard which specifies that every message must have a unique ID and breaks the acknowledgement mechanism. The message ID must be unique within the scope of the sending facility. Previously, the MSH-10 field length (20) did not support a GUID, but the field length has been increased and now does.

Reports are identified by the OBR Filler order number in ORU messages and the Filler order number entity Identifier must be unique within the scope of the Filler HD. Many messages are not scoped by the Filler HD and use very simple values e.g.“123” which makes uniquely identifying documents impossible. This causes duplicate results/

documents and creates the potential to ignore documents that are thought to be the same as an existing document but in fact are from different organisations.

Misuse of FT datatype

The FT datatype is used to format text for display and supports multiple lines and emphasized characters. Systems displaying such text are expected to use a fixed pitch font to support alignment across lines, including simple tabular data. Implementers should check that at least 80 columns of text can be displayed or report formatting will be compromised. Common errors are incorrect end of line designators; incorrectly embedding HTML, PDF, or RTF strings; not correctly escaping special HL7 characters; illegal characters for the default or nominated ascii character set.

Incorrect use of character set in MSH-18

The default character set for HL7 messages is 7 bit ASCII. Even when implementations explicitly populate MSH-18 with 'ASCII', there are sometimes 8 bit characters included in some messages. If users need to use 8-bit characters then MSH-18 needs to indicate the character set used.

Incorrect usage of HL7 separator characters in ST for OBR-18, OBR-19, OBR-20

The special placer and filler fields in OBR are designed to allow individual systems to concatenate various pieces of information into the one field. Some implementers use '~' or '^' characters as separators, without escaping. This is incorrect usage.

Incorrect interpretation of PV1-Patient Class value 'N'

In a number of ADT and other message types, PV1 is a required segment. There are valid circumstances where this does not make sense, i.e. where no visit is associated with the message and therefore PV1 is irrelevant. HL7 introduced a special value PV1-2 (Patient Class) to support such circumstances. The value 'N', denoting "Not Applicable", should be used to indicate that the segment itself is not applicable and should be ignored. HL7 did this to maintain backwards compatibility. i.e. PV1 must still be sent for those message types where it is denoted a required field, even when it makes no sense. If the segment were not sent, then some receiving systems might reject the message as invalid.

The misuse of this special 'N' value is when systems send an 'N' for PV1-2 patient class when they wish to denote that a value for the concept "Patient Class" is not applicable, rather than the entire segment. Some pathology systems send an otherwise valid PV1 segment that may contain important information such as patient location (at time of sample collection) and referring doctor. Receiving systems could rightly ignore the content of this segment on the basis of the 'N' that has been misapplied. Although it may seem reasonable for a lab to believe that there is no visit by the patient to the lab, the intent of the standard is that the patient class refers to the context in which the request for a test was made. Table 0004 may not appear to have appropriate values to cover all contexts, e.g. 'visits' under the national Bowel Cancer Screening Program where an individual submits a sample to the lab in response to a solicitation by the Program. In such cases were a PV1 segment is sent in an ORU message, PV1-3 should be set to 'U' for "Unknown".

HL7 Specification errors and Anomalies

CM datatypes

CM (Composite) is not really datatype at all, but variable assemblies of simpler datatypes. The assemblies are context specific - i.e. vary from field to field within a message. For example, there are 5 completely different variants of CM datatypes in an OBR segment. CM was an anomaly introduced in certain fields of early versions of HL7. Those fields retained the rogue CM types in HL7 versions up until v2.5 when each CM was replaced by a proper, individual datatype for each relevant field. Thus HL7 v2.4's OBR-32 (Principal Results Interpreter) changed from the rogue type CM to a dedicated NDL (name with date and location) datatype.

IS vs ID inconsistencies

In HL7, an ID datatype denotes that the coded value or identifier gets its meaning from a published HL7 table, managed by HL7 International. An IS datatype denotes that the code gets its meaning from a user defined table. Unfortunately there are some inconsistencies in the published HL7 specifications where

In v2.4 Chapter 2, a CX datatype specifies ID datatype for component Identifier Type code and points to HL7 Table 0203 - Identifier Type (see page 301).

In v2.4 Chapter 2, an XCN datatype specifies ID datatype for component Identifier Type Code in the XCN structure table, but also IS datatype in the explanatory section and (wait for it) also points to HL7 Table 0203 - Identifier Type (see page 301) (for *suggested* values). This was partly corrected in v2.7 where ID is specified in both sections of the XCN specification.

HL7 Ambiguities

Case sensitivity

HL7 v2 standards have generally not been prescriptive about case sensitivity in Segment names, identifiers or field values.

Whitespace in fields

HL7 v2 standards are not prescriptive about leading or trailing whitespace (SPACE character and TAB character) in fields. This particularly plays havoc when trying to compare received values against stored values. It is a general problem in health data messaging and also occurs with the distribution and use of agreed code tables stored in spreadsheets.

Context alters meaning

OBR-7 (see page 213) (Observation Start Date/Time) and OBR-8 (Observation End Date/Time) mean different things, depending on whether a specimen is collected. If so, then they don't relate to the observation time at all. They relate to the collection time. The standard doesn't explain "collection", but appears to be collection from the patient, not collection from the collection site. E.g. a patient might take a urine sample, take it to a Laboratory collection site, perhaps at a health clinic, and then it is collected by the Laboratory courier and taken to the Lab for analysis. In this case, the Observation start and end times refer to the date/time the patient produced the sample.

Some segments and fields require or expect to be different between an order message vs a report (ORU) message.

HL7 Fields

OBR-16 Ordering provider

This field is not necessarily the sender or recipient . Refer to **4.4.1.16 OBR-16 Ordering provider (XCN) 00226** (see page 223).

Appendix 4 HL7 Code Tables (Normative)

In HL7 V2.4 there are two table types, reflecting content ownership: HL7 defined and User-defined. Local implementation may further constrain these table types.

User-defined Tables

A user-defined table is a set of values that are locally or site defined.

HL7 Tables

An HL7 table is a set of values defined and published by HL7. They are a part of the HL7 Standard because they affect the interpretation of the messages that contain them. These values may not be redefined locally; however, the table itself may be extended to accommodate locally defined values. HL7 tables can be thought of as universally used tables.

Quick links to HL7 and User-Defined code Tables

Following are quick links to HL7 and User defined tables described in the chapters that are commonly used in Australian messaging.

Quick links:

User-defined Table 0001 - Administrative sex (see page 64)

HL7 Table 0002 - Martial status (see page 66)

User-defined Table 0004 - Patient class (see page 76) (see page 34)

User-defined Table 0006 - Religion (see page 0)

User-defined Table 0007 - Admission type (see page 77)

HL7 Table 0008 - Acknowledgment code (see page 34) (see page 79)

User-defined Table 0009 - Ambulatory status (see page 82)

User-defined Table 0010 - Physician ID (see page 79)

User-defined Table 0018 - Patient type (see page 84)

User-defined Table 0021 - Bad debt agency code (see page 88)

User-defined Table 0023 - Admit source (see page 81)

User-defined Table 0032 - Charge/price indicator (see page 85)

HL7 Table 0038 - Order status (see page 293)

User-defined Table 0044 - Contract code (see page 86)

User-defined Table 0045 - Courtesy code (see page 86)

User-defined Table 0046 - Credit rating (see page 86)

HL7 Table 0048 - What subject filter (see page 112)

HL7 Table 0061 - Check digit scheme (see page 190)

User defined Table 0063 - Relationship (see page 403)

User-defined Table 0064 - Financial class (see page 84)

User defined Table 0063 - Relationship

Example field: NK1-3 Relationship

Value	Description
BR	Brother
DC	Dependent child
EC	Emergency contact
EM	Employer
FA	Father
FR	Friend
MO	Mother
SI	Sister
SP	Spouse

HL7 Table 0260 - Patient Location Type

Example field: used in the 9th field of OBR-32 Principal result interpreter

Value	Description
E	Emergency
I	Inpatient
O	Outpatient
S	Same day surgery

HL7 Table 0119 - Order control codes

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
NW	ORM^O01	New order/service	P	l
	OML^O21			
	OMD^O03			
	OMS^O05			
	OMN^O07			

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	OMP^O09			
OK	ORR^O02	Order/service accepted & OK	F	l
	ORG^O20			
	ORD^O04			
	ORS^O06			
	ORN^O08			
	ORP^O10			
	RRE^O12			
	RRD^O14			
	RRG^O16			
	RRA^O18			
UA	ORR^O02	Unable to accept order/service	F	n
	ORG^O20			
	ORD^O04			
	ORS^O06			
	ORN^O08			
	ORP^O10			
	RRE^O12			
	RRD^O14			
UA	RRG^O16	Unable to accept order/service	F	n
	RRA^O18			
PR	ORM^O01	Previous Results with new order/service	P	v
	OML^O21			
CA	ORM^O01	Cancel order/service request	P	a
	OML^O21			

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	OMD^O03			
	OMS^O05			
	OMN^O07			
	OMP^O09			
OC	ORM^O01	Order/service canceled	F	
	OML^O21			
	OMS^O05			
	OMN^O07			
	RDE^O11			
	RDS^O13			
	RGV^O15			
	RAS^O01			
CR	ORR^O02	Canceled as requested	F	
	ORG^O20			
	ORD^O04			
	ORS^O06			
	ORN^O08			
	ORP^O10			
UC	ORR^O02	Unable to cancel	F	b
	ORG^O20			
UC	ORD^O04	Unable to cancel	F	b
	ORS^O06			
	ORN^O08			
	ORP^O10			
DC	ORM^O01	Discontinue order/service request	P	c

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	OML^O21			
	OMD^O03			
	OMS^O05			
	OMN^O07			
	OMP^O09			
OD	ORM^O01	Order/service discontinued	F	
	OML^O21			
	OMS^O05			
	OMN^O07			
	RDE^O11			
	RDS^O13			
	RGV^O15			
	RAS^O01			
DR	ORR^O02	Discontinued as requested	F	
	ORG^O20			
	ORD^O04			
	ORS^O06			
	ORN^O08			
	ORP^O10			
UD	ORR^O02	Unable to discontinue	F	
	ORG^O20			
UD	ORD^O04	Unable to discontinue	F	
	ORS^O06			
	ORN^O08			
	ORP^O10			

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
HD	ORM^O01	Hold order request	P	
	OML^O21			
	OMD^O03			
	OMP^O09			
OH	ORM^O01	Order/service held	F	
	OML^O21			
	OMS^O05			
	OMS^O05			
	OMN^O07			
	OMN^O07			
	RDE^O11			
	RDS^O13			
	RGV^O15			
	RAS^O01			
UH	ORR^O02	Unable to put on hold	F	
	ORG^O20			
	ORD^O04			
	ORS^O06			
	ORN^O08			
	ORP^O10			
HR	ORR^O02	On hold as requested	F	
	ORG^O20			
HR	ORD^O04	On hold as requested	F	
	ORS^O06			
	ORN^O08			

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	ORP^O10			
RL	ORM^O01	Release previous hold	P	
	OML^O21			
	OMD^O03			
	OMS^O05			
	OMN^O07			
	OMP^O09			
OE	ORM^O01	Order/service released	F	
	OML^O21			
	OMS^O05			
	OMN^O07			
	RDE^O11			
	RDS^O13			
	RGV^O15			
	RAS^O01			
OR	ORR^O02	Released as requested	F	
	ORG^O20			
	ORD^O04			
	ORS^O06			
	ORN^O08			
	ORP^O10			
UR	ORR^O02	Unable to release	F	
	ORG^O20			
UR	ORD^O04	Unable to release	F	
	ORS^O06			

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	ORN^O08			
	ORP^O10			
RP	ORM^O01	Order/service replace request	P	"e,d"
	OML^O21			
	OMS^O05			
	OMN^O07			
	OMP^O09			
RU	ORM^O01	Replaced unsolicited	F	"f,d"
	OML^O21			
	OMS^O05			
	OMN^O07			
	RDE^O11			
RO	ORM^O01	Replacement order	"P,F"	"g,d"
	OML^O21			
	OMS^O05			
	OMN^O07			
	OMP^O09			
	RDE^O11			
RQ	ORR^O02	Replaced as requested	F	"d,e"
	ORG^O20			
	ORS^O06			
	ORN^O08			
	ORP^O10			
UM	ORR^O02	Unable to replace	F	
UM	ORG^O20	Unable to replace	F	

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	ORS^O06			
	ORN^O08			
	ORP^O10			
PA	ORM^O01	Parent order/service	F	I
	OML^O21			
	OMS^O05			
	OMS^O05			
	OMP^O09			
	RDE^O11			
	RGV^O15			
	RAS^O01			
	ORU^R01			
CH	ORM^O01	Child order/service	"F,P"	I
	OML^O21			
	OMS^O05			
	OMS^O05			
	RDE^O11			
	RGV^O15			
	RAS^O01			
	ORU^R01			
XO	ORM^O01	Change order/service request	P	
	OML^O21			
	OMD^O03			
	OMS^O05			
	OMS^O05			

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
XO	OMP^O09	Change order/service request	P	
XX	ORM^O01	"Order/service changed, unsol."	F	
	OML^O21			
	OMS^O05			
	OMS^O05			
	RDE^O11			
	RDS^O13			
	RDS^O13			
	RGV^O15			
	RAS^O01			
	RAS^O01			
UX	ORR^O02	Unable to change	F	
	ORG^O20			
	ORD^O04			
	ORS^O06			
	ORN^O08			
	ORP^O10			
XR	ORR^O02	Changed as requested	F	
	ORG^O20			
	ORD^O04			
	ORS^O06			
	ORN^O08			
	ORP^O10			
DE	ORM^O01	Data errors	"P,F"	
	ORR^O02			

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	ORG^O20			
DE	ORS^O06	Data errors	"P,F"	
	ORN^O08			
	ORP^O10			
	RRE^O12			
	RRD^O14			
	RRG^O16			
	RRA^O18			
RE	ORM^O01	Observations/Performed Service to follow	"P,F"	j
	OML^O21			
	RDE^O11			
	RDS^O13			
	RGV^O15			
	RAS^O01			
	ORU^R01			
	REF^I12			
RR	ORR^O02	Request received	"P,F"	k
SR	ORR^O02	Response to send order/service status request	F	
	OSR^Q06			
SS	ORM^O01	Send order/service status request	P	
	OML^O21			
SC	ORM^O01	Status changed	"F,P"	
	OML^O21			
SN	ORM^O01	Send order/service number	F	l
	OML^O21			

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	OMS^O05			
	OMS^O05			
	RDE^O11			
NA	ORR^O02	Number assigned	P	l
	ORG^O20			
	ORS^O06			
	ORN^O08			
	RRE^O12			
CN	ORU^R01	Combined result	F	m
RF	ORM^O01	Refill order/service request	"F, "	o
	OMP^O09			
	RDE^O11			
AF	ORR^O02	Order/service refill request approval	P	p
	RRE^O12			
DF	ORR^O02	Order/service refill request denied	P	q
	ORP^O10			
	RRE^O12			
FU	ORM^O01	"Order/service refilled, unsolicited"	F	r
	RDE^O11			
OF	ORR^O02	Order/service refilled as requested	F	s
	ORP^O10			
UF	ORR^O02	Unable to refill	F	t
	ORP^O10			
LI	ORM^O01	Link order/service to patient care problem or goal		u

Value[1]	Event/Message Type	Description	Originator[2]	Field Note[3]
	OML^O21			
	OMS^O05			
	OMS^O05			
LI	OMP^O09	Link order/service to patient care problem or goal		u
	RDE^O11			
	RDS^O13			
	RAS^O01			
UN	ORM^O01	Unlink order/service from patient care problem or goal		u
	OML^O21			
	OMS^O05			
	OMN^O07			
	OMP^O09			
	RDE^O11			
	RDS^O13			
	RAS^O01			

Notes:
1 The order control value field
2 “F”: Values originate from the filler and are not restricted to be sent only to the placer. “P”: Values originate from the placer or other application with placer privileges (as agreed in interface negotiation).
3 See table notes below for explanation of codes.

HL7 Table 0136 - Yes/No indicator

Value	Description
Y	Yes
N	No

Appendix 5 Conformance Statements (Normative)

Conformance Statements have been developed to help in formulating conformance testing of pathology messaging implementations in Australia against this Implementation Guide. The list below is not exhaustive. The entries are included here primarily if they:-

- are important from a safety or quality perspective, or
- are commonly not correctly implemented, or
- are at variance with the base HL7 v2.4 specifications.

Conformance of messages to base HL7 2.4 standards is otherwise assumed, and individual conformance tests or test applications may check against the base specification.

The following table indicates whether a conformance statement applies to a message sender, a message receiver, or both. In the case where a conformance statement applies to a message sender, it is expected that automated conformance checking can be carried out on one or more real or sample messages. For testing conformance of receiving implementations, the behaviour of the system must be observed in response to one or more real or sample messages.

The table of conformance statements indicates, for each statement, if it applies to order messages only, result messages only, or both.

Note: For the conformance points, generally the rule is stated first followed by the reason. The reason may also be referenced in other sections.

Note: HL7au Identifiers in () parenthesis are headings/groupers and not conformance points in themselves.

Conformance points which are revised will have their revision number in brackets after their HL7au identifier. For example HL7au:00000x.y.z (r2).

The values of Message Type Applicability column and their meanings are: -

- Orders = ORM messages
- Results = ORU messages
- Referrals = All REF messages (includes all profiles)
- Referrals(L1) = Simplified Referral Profile Level 1
- Referrals(L2) = Simplified Referral Profile Level 2
- Acknowledgement = ACK messages
- Referral Response = RRI messages

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000001	Senders/Receivers	Orders	Order addressing - Senders and receivers must ensure an order message is addressed using MSH-6 *Receiving facility*, as per rules in sub points of HD Datatype conformance heading HL7au:00044.2.	
HL7au:000001.1	Receivers	Orders	The system must actively reject an order message where the MSH-6 Receiving Facility does not identify their organisation	
HL7au:000001.2	Senders	Orders	When using SMD refer to HL7au:000044.2 otherwise; senders should address order messages in MSH-6 *Receiving facility* using the NATA number if available.	
HL7au:000001.2.1	Senders	Orders	In MSH-6 the namespace ID should contain the registered NATA name for the laboratory as published by NATA (www.nata.com.au[100])	
HL7au:000002 (r2)	Receivers	Results, Referrals	The system receiving messages must ensure that any document identifiers (OBR-3 Filler order number (EI)) in the received message are fully specified, with the authoring organisation's HD qualifying the identifier. This is done by testing that all components of Entity Identifier (EI) are valued, and when not returning error acknowledgement.	Document updating depends on a reliable document identifier and without a namespace for the identifier safe updating/corrections to documents is not possible.

100 http://www.nata.com.au

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000003 (r2)	Senders	Orders, Results, Referrals	If OBR-2 is valued, then to ensure the uniqueness of the Entity Identifier (EI) in OBR-2 (*Placer Order Number)* for a request identifier across different organisations, the Entity identifier (first component) in addition to the Namespace ID (second component) and Universal ID (third component) and Universal ID type (4th component) must be populated.	field optionality is still allowed i.e. field may be completely unvalued
HL7au:000004.1 (r3)	Senders	Orders, Results, Referrals	If OBR-3 is valued, then to ensure the uniqueness of the Entity Identifier (EI) in OBR-3 (*Filler Order Number*) for a result identifier across different organisations, the Entity identifier (first component) in addition to the Namespace ID (second component) and Universal ID (third component) and Universal ID type (4th component) must be populated.	It is vital that a unique identifier within the authoring facility HD is used in the first component. The ability to issue corrected documents depends on the uniqueness of this document identifier. Future updates to a document will use the same identifier in OBR-3.
HL7au:000004.2 (r1)	Receivers	Orders, Results, Referral	Older results with identical Entity Identifier (EI) in OBR-3 (*Filler Order Number*) to that of a newly received result message (by comparing OBR-22 Rpt/Status Change Date/Time field) must be replaced with the new message, and the older marked as deleted/superseded.	This applies independently to each OBR /OBX group

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000005 (r2)	Senders	Orders, Results, Referrals	If ORC-2 is valued, then to ensure the uniqueness of the Entity Identifier (EI) in ORC-2 (*Placer Order Number)* for a request identifier across different organisations, the Entity identifier (first component) in addition to the Namespace ID (second component) and Universal ID (third component) and Universal ID type (4th component) must be populated.	field optionality is still allowed i.e. field may be completely unvalued
HL7au:000006 (r3)	Senders	Orders, Results	If ORC-3 is valued, then to ensure the uniqueness of the Entity Identifier (EI) in ORC-3 (*Filler Order Number*) for a result identifier across different organisations, the Entity identifier (first component) in addition to the Namespace ID (second component) and Universal ID (third component) and Universal ID type (4th component) must be populated.	
HL7au:000007 (r2)	Senders	Orders, Results, Referrals	If ORC-4 is valued, then to ensure the uniqueness of the Entity Identifier (EI) in ORC-4 (*Placer Group Number*) for a request identifier across different organisations, the Entity identifier (first component) in addition to the Namespace ID (second component) and Universal ID (third component) and Universal ID type (4th component) must be populated.	field optionality is still allowed i.e. field may be completely unvalued
(HL7au:000008)	**Display Segments**			

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008	Senders	Results, Referrals	The message must contain at least one OBX display segment per OBR/OBX group.	**wording updated, same intention
HL7au:000008.1 (r2)	Senders	Results, Referrals	Display segments must use the appropriate valid values within the AUSPDI coding system in OBX-3 for the content that is represented in it: • OBX||ED|HTML^Display format in HTML^AUSPDI||^text^HTML^A^<?xml version="1.0"… • OBX||ED|PDF^Display format in PDF^AUSPDI||^application^pdf^Base64^ • OBX||ED|RTF^Display format in RTF^AUSPDI||… • OBX||FT|TXT^Display format in text^AUSPDI||… (Referral Level 1 receivers are only required to support PDF display segments. See HL7au: 000008.3.1)	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.1.1 (r4)	Receivers	Results, Referrals	For Referrals Level 1 Receivers must be capable of displaying PDF (either via an embedded viewer or an external viewer) For other profiles: Receivers should be capable of displaying all display formats HTML, PDF, RTF, TXT (HL7 FT) (either via an embedded viewer or an external viewer), and must provide users access to all of these in an external viewer application if they are unable to fully display the format. *This conformance point was relaxed 31/10/2017.	Some formats may be viewed with an embedded viewer and external viewer, while other formats may be viewed with just an external viewer e.g. RTF). It is important that all can be accessed and viewed.
HL7au:000008.1.2	Senders and Receivers	Results	An OBX display segment is identified using OBX-3 Identifier (CE-1) and Name of Coding System (CE-3) components. The text component of the CE may be blank and only CE1 and CE-3 components need to match.	
HL7au:000008.1.3	Senders and Receivers	Results	In an OBX display segment, the OBX-2 Value Type field must match its corresponding display format specified in OBX-3 Identifier (ST) component as per table Display Format codes (see page 247) in Section 4.5 Display Segments (see page 247).	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.1.4	Senders and Receivers	Results	In an OBX display segment, the OBX-3 <name of coding system (IS)> must be valued "AUSPDI".	
HL7au:000008.1.5	Senders	Results, Referrals	The OBX display segment(s) must be the last in a set of OBX segments in each OBR/OBX group, with the exception of digital signature OBX(s) which may be after the display segments OBXs. (Display segments can be identified by having AUSPDI OBX-3 <name of coding system>)	
HL7au:000008.1.6	Receivers	Results, Referrals	When a display segment is shown, the earlier atomic OBX segments must not be rendered.	
HL7au:000008.2	Senders	Results	There must NOT be conflicting content between the OBX display segment and the preceding OBX atomic data. A compliant rendering of the atomic data (if present) must contain the same clinical information.	
HL7au:000008.2.1	Senders	Referrals	For OBX within the supporting information OBR/ OBX groups. There must NOT be conflicting content between the OBX display segment and the preceding OBX atomic data. A compliant rendering of the atomic data (if present) must contain the same clinical information.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.2	Senders	Referrals	For OBX within the current summary OBR/OBX group as indicated by OBR-4 as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212). There must NOT be conflicting content between the OBX display segment and the preceding OBX atomic data and the medication and allergy segments of the REF message.	
HL7au:000008.3.1	Senders	Referrals	For Referrals Level 1: The single OBR/OBX group of the message must contain an OBX display segment in PDF format. For other profiles: Each OBR/OBX group of the message must contain at least one of the following OBX display segments HTML, PDF, TXT (HL7 FT).	
HL7au:000008.3.2	Senders	Referrals(L2)	If an RTF display segment is sent in an OBR/OBX group, then the same content must be sent in one of either HTML, PDF, or TXT (HL7 FT) same OBR/OBX group.	
(HL7au:000008.2.3)	**XHTML Display Segment**			
(HL7au:000008.2.3.1)	**XHTML Display Segment - Sender**			

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.3.1.01	Senders	Results, Referrals	Any OBX HTML display segments must be valid HTML and conform to the Document Type defined in 'XHTML 1.0 Strict' standard. Refer to http://validator.w3.org/ to validate XHTML content.	
HL7au:000008.2.3.1.02	Senders	Results, Referrals	All embedded hyperlinks must be secure hyperlinks i.e. https:// . That is http:// is disallowed.	
HL7au:000008.2.3.1.03	Senders	Results, Referrals	Sender must not use external style sheets. Internal style sheets are allowed. Note: external stylesheets are a security risk and could affect presentation of content.	
HL7au:000008.2.3.1.04	Senders	Results, Referrals	Sender must not use scripts e.g. JavaScript etc. Note: active content is not allowed either inline or as external references.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.3.1.05	Senders	Results, Referrals	Sender must not use the following elements: • base • link • xlink • frame • iframes • form • object	
HL7au:000008.2.3.1.06	Senders	Results, Referrals	If there is an image map, senders must have an additional mechanism for communicating that information because there is no obligation on receiving systems to deal with image maps.	
HL7au:000008.2.3.1.07	Senders	Results, Referrals	Embedded CSS shall conform to the CSS3 specification.	
HL7au:000008.2.3.1.08	Senders	Results, Referrals	The core display of the report must be encapsulated in a 'div' element of html class ‘reportDisplay’.	
HL7au:000008.2.3.1.09	Senders	Results, Referrals	Letter head information should be encapsulated in XHTML elements outside of the scope of the core display of the report identified by 'div' html class 'reportDisplay'.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.3.1.10	Senders	Results, Referrals	Letter head images may not be embedded in the html but served externally.	
HL7au:000008.2.3.1.11	Senders	Results, Referrals	External letter head image sources must not be used, except when used outside a 'div' 'reportDisplay' class html element and only when that 'div' it is present.	
HL7au:000008.2.3.1.12	Senders	Results, Referrals	The core report must display in a readable way with the CSS removed.	
HL7au:000008.2.3.1.13	Senders	Results, Referrals	Information in the core report data must not be hidden by CSS formatting directives.	
HL7au:000008.2.3.1.14	Senders	Results, Referrals	Image element "src" attributes must use the value "hl7v2://OBX.<setID>" where the setID reference the OBX in the message containing the Encapsulated Data (ED) image or Reference Pointer (RP) to the data, except for images which are a part of a letterhead as per HL7au: 000008.2.3.1.10.	
HL7au:000008.2.3.1.15	Senders	Results, Referrals	External images may be linked from the report body via a clickable link which the user can manually select.	e.g. to access a PACS image
(HL7au:000008.2.3.2)	**XHTML Display segment - Receiver**			

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.3.2.01	Receivers	Results, Referrals(L2)	HTML display segments must be displayed using a HTML/CSS component that is compliant for rendering of XHTML and CSS3.	
HL7au:000008.2.3.2.03	Receivers	Results, Referrals(L2)	Secure hyperlinks (https://) must be able to be clicked by a user and client application must enable navigation to secure https:// sites .	
HL7au:000008.2.3.2.04	Receivers	Results, Referrals(L2)	Receiving software may filter or disable all embedded JavaScript.	
HL7au:000008.2.3.2.05	Receivers	Results, Referrals(L2)	Receiving software may suppress objects, iframes, forms with base/link/xlink	
HL7au:000008.2.3.2.06	Receivers	Results, Referrals(L2)	Receiving software may block access to insecure hyperlinks e.g. file://, http://	
HL7au:000008.2.3.2.07	Receivers	Results, Referrals(L2)	It should be possible for users in receiving software to selectively hide content outside of the 'div' element of html class ‘reportDisplay’.	
HL7au:000008.2.3.2.08	Receivers	Results, Referrals(L2)	Receiving software should not selectively hide any html when no 'div' element of html class ‘reportDisplay’ is not present in XHTML content.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.3.2.02	Receivers	Results, Referrals(L2)	Receiver must support embedded images in XHTML that must be proper URLs suitable for browser use directly, or use the HL7 V2: scheme defined in the HTML Appendix.	Receivers may choose to parse the xml and replace the hl7v2 scheme content with a base64 encoded image from the appropriate OBX. eg. `<img src="....." />`
HL7au:000008.2.3.2.09	Receivers	Results, Referrals(L2)	XHTML containing images with a source referring back to an RP OBX segment using the 'hl7v2://OBX.<setID>' must be resolved so that the images are viewable.	** Note that regular browsers do not support this feature directly, xhtml preprocessing is required before display with browser
HL7au:000008.2.3.2.10	Receivers	Results, Referrals(L2)	XHTML containing images with a source referring back to an ED OBX segment using the 'hl7v2://OBX.<setID>' must be resolved so that the images are viewable.	** Note that regular browsers do not support this feature directly, xhtml preprocessing is required before display with browser
(HL7au:000008.2.4)	**PDF Display segment**			
(HL7au:000008.2.4.1)	**PDF Display segment - Sender**			
HL7au:000008.2.4.1.1	Senders	Results, Referrals	Documents must be valid according to the PDF/A-1b profile.	
HL7au:000008.2.4.1.2	Senders	Results, Referrals	Must embed fonts	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.4.1.3	Senders	Results, Referrals	Must not use encryption/password protection	
HL7au:000008.2.4.1.4	Senders	Results, Referrals	Must not use PDF Comments	
HL7au:000008.2.4.1.5	Senders	Results, Referrals	Must not restrict printing.	
HL7au:000008.2.4.1.6	Senders	Results, Referrals	Must not restrict copying.	
HL7au:000008.2.4.1.7	Senders	Results, Referrals	May use PDF digital signature	
HL7au:000008.2.4.1.8	Senders	Results, Referrals	May use PDF restrict changes	
HL7au:000008.2.4.1.9	Senders	Results, Referrals	May use PDF compression	
(HL7au:000008.2.4.2)	**PDF Display segment - Receiver**			
HL7au:000008.2.4.2.1	Receivers	Results, Referrals	Receiver software must display the received PDF with a PDF viewer component.	
HL7au:000008.2.4.2.2	Receivers	Results, Referrals	Receiver software must be capable of rendering PDF/A-1b content.	
HL7au:000008.2.4.2.3	Receivers	Results, Referrals	Receiver must support embedded fonts. This is because content is laid out based on font metrics.	
HL7au:000008.2.4.2.4	Receivers	Results, Referrals	Receiver must support PDF compression.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.4.2.5	Receivers	Results, Referrals	Receivers may validate for PDF digital signatures.	
HL7au:000008.2.4.2.6	Receivers	Results, Referrals	Receiver software must not allow changes to documents in all circumstances. This is irrespective of PDF flags to restrict changes.	
(HL7au:000008.2.4.3)	RTF Display segment			
(HL7au:000008.2.4.3.1)	**RTF Display segment - Sender**			
HL7au: 000008.2.4.3.1.1	Senders	Results, Referrals	RTF must not contain nested tables (i.e. tables inside tables)	
HL7au: 000008.2.4.3.1.2	Senders	Results, Referrals	RTF must not contain active content such as Objected Linking and Embedding Objects (OLE), except with image rendition subject to site-specific negotiation.	
HL7au: 000008.2.4.3.1.3	Senders	Results, Referrals	RTF must not contain embedded fonts	
HL7au: 000008.2.4.3.1.4	Senders	Results, Referrals	RTF must not contain smart shapes/other drawing objects (convert these to PNG images)	
HL7au: 000008.2.4.3.1.5	Senders	Results, Referrals	RTF must not contain smart tags	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au: 000008.2.4.3.1.6	Senders	Results, Referrals	RTF must not contain change tracking markup or comments	
HL7au: 000008.2.4.3.1.7	Senders	Results, Referrals	RTF must not contain section specific page layout	
HL7au: 000008.2.4.3.1.8	Senders	Results, Referrals	RTF must not contain word forms	
HL7au: 000008.2.4.3.1.9	Senders	Results, Referrals	Clinical information must not be presented in Header/footer/cross-references.	
HL7au: 000008.2.4.3.1.10	Senders	Results, Referrals	Branding information may be presented in Header/footer/cross-references.	
HL7au: 000008.2.4.3.1.11	Senders	Results, Referrals	Watermark must not be required to be viewed.	
HL7au: 000008.2.4.3.1.12	Senders	Results, Referrals	All field values are up to date, as fields may not updated, only displayed as text.	
(HL7au:000008.2.4.3.2)	**RTF Display segment - Receiver**			

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
			Note: Referral receivers may choose to support the required RTF receiver capability by allowing the user to launching a compliant external RTF viewer application (such as Microsoft Word Viewer / Microsoft Word). It is not a requirement to embed a viewer.	
HL7au: 000008.2.4.3.2.01	Receivers	Results, Referrals(L2)	Receivers must process the \binXXXX control word and skip processing of RTF control words for XXX bytes.	Refer to Word 2007: Rich Text Format (RTF) Specification, version 1.9.1[101] page 211 where it says *"the reader must explicitly check each control word found to see if it is a **\binN** control, and if found, skip that many bytes before resuming its scanning for braces."*
HL7au: 000008.2.4.3.2.02	Receivers	Results, Referrals(L2)	Receivers must support tables, except for nested tables	
HL7au: 000008.2.4.3.2.03	Receivers	Results, Referrals(L2)	Receivers must support hyperlinks	
HL7au: 000008.2.4.3.2.04	Receivers	Results, Referrals(L2)	Receivers must allow secure https:// hyperlinks to be clickable and navigable into a web browser.	
HL7au: 000008.2.4.3.2.05	Receivers	Results, Referrals(L2)	Receivers must support display of RTF embedded bmp, gif, png, jpg, and emf.	

101 https://interoperability.blob.core.windows.net/files/Archive_References/%5bMSFT-RTF%5d.pdf

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au: 000008.2.4.3.2.06	Receivers	Results, Referrals(L2)	Receivers must support display of RTF columns	
HL7au: 000008.2.4.3.2.07	Receivers	Results, Referrals(L2)	Receivers must support Lists including bullet and numbers.	
HL7au: 000008.2.4.3.2.08	Receivers	Results, Referrals(L2)	Receivers must support display of nested lists with indication of logical nesting.	
HL7au: 000008.2.4.3.2.09	Receivers	Results, Referrals(L2)	Display of selected field values.	Editors such as Microsoft Word allow form fields to be created such as combo boxes, radio buttons and check boxes which users can select a value from. This the selected field value refers to the answer which should be present in the RTF field.
HL7au: 000008.2.4.3.2.10	Receivers	Results, Referrals(L2)	Receivers may support Header/footer/cross-references	
HL7au: 000008.2.4.3.2.11	Receivers	Results, Referrals(L2)	Receivers may support watermarks	
HL7au: 000008.2.4.3.2.12	Receivers	Results, Referrals(L2)	Receivers must display field values.	This refers to fields such as page numbers. RTF senders should include the value in the field.

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au: 000008.2.4.3.2.13	Receivers	Results, Referrals(L2)	Receivers may not calculate field values.	
(HL7au:000008.2.4.4)	**FT Display segment**			
(HL7au:000008.2.4.4.1)	**FT Display segment - Sender**			
HL7au: 000008.2.4.4.1.01	Senders	Results, Referrals	Senders must escape '|' character to the field separator character escape sequence "\F\"	
HL7au: 000008.2.4.4.1.02	Senders	Results, Referrals	Senders must escape '^' character to the component separator character escape sequence "\S\"	
HL7au: 000008.2.4.4.1.03	Senders	Results, Referrals	Senders must escape '&' character to the sub-component separator character escape sequence "\T\"	
HL7au: 000008.2.4.4.1.04	Senders	Results, Referrals	Senders must escape '~' character to the repeat character escape sequence "\R\"	
HL7au: 000008.2.4.4.1.05	Senders	Results, Referrals	Senders must escape '\' character to the escape character escape sequence "\E\"	
HL7au: 000008.2.4.4.1.06	Senders	Results, Referrals	Senders must escape new line character(s) to the escape sequence "\.br\"	
HL7au: 000008.2.4.4.1.07	Senders	Results, Referrals	Senders must design FT content for presentation with a monospaced font	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au: 000008.2.4.4.1.08	Senders	Results, Referrals	Senders must not use "\Xdddd...\" hexadecimal data escape sequences	
HL7au: 000008.2.4.4.1.09	Senders	Results, Referrals	Senders must not use "\Zdddd..\" locally defined escape sequences	
HL7au: 000008.2.4.4.1.10	Senders	Results, Referrals	Senders must not use "\.ce\" escape sequences.	
HL7au: 000008.2.4.4.1.11	Senders	Results, Referrals	Senders must not break FT content into multiple components or repeats.	
HL7au: 000008.2.4.4.1.12	Senders	Results, Referrals	Senders must limit intended display line lengths to 80 characters.	
HL7au: 000008.2.4.4.1.13	Senders	Results, Referrals	Senders must not use "\M" escape sequences.	
HL7au: 000008.2.4.4.1.14	Senders	Results, Referrals	Senders must not use "\C" escape sequences.	
(HL7au:000008.2.4.4.2)	**FT Display segment - Receiver**			
HL7au: 000008.2.4.4.2.01	Receivers	Results, Referrals(L2)	FT datatype content SHALL be displayed using monospaced font	
HL7au: 000008.2.4.4.2.02	Receivers	Results, Referrals(L2)	Receivers must de-escape "\F\" to the field separator character '|'	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au: 000008.2.4.4.2.03	Receivers	Results, Referrals(L2)	Receivers must de-escape "\S\" to the component separator character '^'	
HL7au:000008.2.4.4.2.04	Receivers	Results, Referrals(L2)	Receivers must de-escape "\T\" to the sub-component separator character '&'	
HL7au:000008.2.4.4.2.05	Receivers	Results, Referrals(L2)	Receivers must de-escape "\R\" to the repetition character '~'	
HL7au:000008.2.4.4.2.06	Receivers	Results, Referrals(L2)	Receivers must de-escape "\E\" to the escape character '\'	
HL7au:000008.2.4.4.2.07	Receivers	Results, Referrals(L2)	Receivers must start highlighting text whenever "\H\" escape sequence is encountered	
HL7au:000008.2.4.4.2.08	Receivers	Results, Referrals(L2)	Receivers must end highlighting text whenever "\N\" escape sequence is encountered.	
HL7au:000008.2.4.4.2.09	Receivers	Results, Referrals(L2)	Receivers must support "\.sp <number>\" escape sequences, and must maintain horizontal position while skipping positive <number> vertical spaces. (If <number> is not specified 1 must be assumed).	
HL7au:000008.2.4.4.2.10	Receivers	Results, Referrals(L2)	Receivers must support "\.br\" escape sequence and must begin a new left justified line.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.4.4.2.11	Receivers	Results, Referrals(L2)	Receivers must support the fill mode (word wrap) "\.fi\" escape sequence. This means that after this sequence is encountered a soft line break must be introduced when horizontal space runs out.	
HL7au:000008.2.4.4.2.12	Receivers	Results, Referrals(L2)	Receivers must support the no fill mode (no word wrap) "\.nf\" escape sequence. This means after this sequence is encountered a soft line break must not be introduced when horizontal space runs out.	
HL7au:000008.2.4.4.2.13	Receivers	Results, Referrals(L2)	Receivers must support indent "\.in <number>\" escape sequences. This means that on encountering this sequence each subsequent new line should be indented by positive <number> characters until the end of the document or another indent escape sequence sets the indent state.	
HL7au:000008.2.4.4.2.14	Receivers	Results, Referrals(L2)	Receivers must support temporary indent "\.ti <number>\" escape sequences. This means that on encountering this sequence the first character of the each line in the paragraph (i.e. until \.br\ is encountered) will be indented to the absolute <number> value of fixed-width characters from the left hand side (not relative to the current .in value).	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000008.2.4.4.2.15	Receivers	Results, Referrals(L2)	Receivers must support skip "\.sk <number>\" escape sequences. This means that on encountering a skip sequence that the next character position will be advanced by <number> spaces to the right.	
HL7au:000008.2.4.4.2.16	Receivers	Results, Referrals(L2)	Receivers must ensure that 80 characters of text (using a non-proportional font) can be displayed without word wrapping the line of text.	
HL7au:000008.2.4.4.2.17	Receivers	Results	Receivers must support 8859/1 character encoding when specified in MSH-18.	
(HL7au:000010)	**Digital signatures**			
HL7au:000010	Receivers	Orders, Results, Referrals(L2)	If a digital signature is received in an OBX segment, receiving systems must recognise the digital signature and not inadvertently process it as data for display.	Refer to Standards Australia publication HB 308HB 308 - Location of Digital Signatures in HL7v2[102] Digital signature OBX can identified by OBX-3 (CE) identifier component starting with "AUSETAV", and OBX-3 name of code system component "L")

102 https://infostore.saiglobal.com/en-au/Standards/HB-308-2011-1496319/

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000010.1	Receivers	Orders, Results, Referrals(L2)	If a digital signature is received in an OBX segment, then the signature and report content should if possible be verified and the results presented to the user on the display with the report.	
HL7au:000019	Senders and Receivers	Orders, Results, Referrals(L2)	A single message of up to 16 MB (16,777,216 bytes) must be able to be received by both the transmitters and receivers of messages. Note: Larger sized messages are feasible, but only under specific trading partner agreements.	
HL7au:000020	Senders	Orders, Results, Referrals(L2)	All message types and trigger event codes beginning with the letter “Z” are reserved for locally-defined messages and must NOT be used.	
HL7au:000021	Senders	Results, Referrals(L2)	Data type TX must NOT be used as a value in the OBX-2 Value Type field.	
(HL7au:000022)	**File and Batch Segments**			

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000022.1	Senders	Orders, Results, Referrals	If the batch header is used it must specify individual message acknowledgement. No information from the file header/footer or batch segments must be used.	
HL7au:000022.2	Receivers	Orders, Results	All messages between the batch header (BHS) and the file trailer (FTS) must be acknowledged individually. The batch itself is not acknowledged.	
HL7au:000022.3	Senders	Referrals	Senders must generate batches containing no more than 1 message.	
HL7au:000022.4	Receivers	Orders, Results, Referrals	Receivers must support receiving messages contained inside HL7 batch protocol or a stand alone HL7 message.	
HL7au:000023	Senders	Orders, Results, Referrals	The NTE segment must NOT be used in messages.	
HL7au:000023.1	Senders	Orders, Results, Referrals	User defined segments (Z segments) must not be used in messages.	
(HL7au:000024)	Delimiters of '|^~\&' from HL7 V2.4 must be used in the message.			
HL7au:000024.1	Senders	Orders, Results, Referrals	FHS, BHS, and MSH segments must specify the Field separator character as '|'	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000024.2	Senders	Orders, Results, Referrals	FHS, BHS, and MSH segments must specify the Components separator character as '^'	
HL7au:000024.3	Senders	Orders, Results	FHS, BHS, and MSH segments must specify the Sub-components separator characters '&'	
HL7au:000024.4	Senders	Orders, Results	FHS, BHS, and MSH segments must specify the repeat separator character as '~'	
HL7au:000024.5	Senders	Orders, Results	FHS, BHS, and MSH segments must specify the escape separator character as '\'	
	General Conformance Points			
HL7au:000025	Senders	Orders, Results, Referrals	The sending facility must ensure their MSH-4 *Sending facility* identifier is unique.	
HL7au:000025.1.1	Receivers	Results, Referrals, Orders	Intended recipients which are Healthcare Services or inactive providers must be managed by the receiving system to ensure the message content is reviewed for triage.	
HL7au:000025.1.2	Receivers	Results, Referrals, Orders	Received messages without an intended recipient which must be managed by the receiving system to ensure the message content is reviewed for triage.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000026	Senders	Results	When sending a report to multiple "copy to " doctors the MSH-10 *Message control* ID must be unique in each message produced for each recipient.	
HL7au:000026.2	Senders	Referrals	When sending copies of the same referral to multiple providers, the MSH-10 Message control ID must be unique in each message produced for each recipient, and the PRD "IR: Intended recipient role must be set appropriately for the intended recipient for each message.	
HL7au:000027	Senders	Orders, Results, Referrals	When re-transmitting a message the MSH-10 *Message control* ID must be unique.	
HL7au:000028	Senders	Results	When there are multiple OBR segments in an ORU message, the OBR-3 *Filler order number* must be unique within messages.	
HL7au:000028.2	Senders	Referrals	When there are multiple OBR/OBX groups in a REF message, each OBR-3 *Filler order number* pair must be unique for each OBR/OBX group.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000029	Senders	Results, Referrals	When re-transmitting/forwarding a message content from one system to another the MSH-4 *Sending facility* must be the re-transmitting/ forwarding S*ending facility* (HD components) and not the original authoring organisation (HD components).	
HL7au:000030	Senders	Results, Referrals	When re-transmitting/forwarding a message's content from one system to another the MSH-10 *Message control ID* must be unique for each message.	
HL7au:000031	Senders	Results, Referrals	When re-transmitting/forwarding a message's content from one system to another OBR-3.2 Filler order number.namespace ID must be used for the display of the authoring organisation e.g. |123456^**Path Lab Name**^43210^AUSNATA|. The *Filler order number* of a result must not be changed.	
HL7au:000032	Senders	Results	In the ORU message the field OBR-24 "Diagnostic serv sect ID" must be valued and must have values from HL7 table 0074 - diagnostic service section.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000032.2	Senders	Referrals	In the REF message the field OBR-24 "Diagnostic serv sect ID" must be valued and must have values from HL7 table 0074 - diagnostic service section appropriate for the content in the OBR/ OBX group.	
HL7au:000032.3	Receivers	Results, Referrals	If the receiving system has a various categories for their inbound communications in their application. eg. Letters, Radiology, then each OBR/OBX group content must be added to those by classifying the OBR/OBX group content based on OBR-24 value. PHY, LAB, RAD are the most common ones. The system must map each value in HL7 Table 0074 - Diagnostic service section ID (see page 225) to the appropriate category.	
HL7au:000033	Senders	Results	In Pathology ORU messages the field OBX-3 "*Observation identifier*" should, if possible, have values from the LOINC coding system except for display segments and digital signature OBX.	
(HL7au:000034)	**Use of Codes**			
HL7au:000034.1	Senders	Results, Referrals	When using CE, CWE, CNE data types in an OBX segment in either OBX-3 (Observation Identifier) or as an Observation Value, if the system transmits both the public (e.g. LOINC) and local terminology, then the public (e.g. LOINC) code must appear in the identifier.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000034.2	Senders	Results, Referrals	When using CE, CWE, CNE data types in an OBX segment, in OBX-3 (Observation Identifier), if the system transmits both a public (e.g. LOINC) and a local terminology, then the local terminology must be transmitted in the second CE triplet i.e. the alternate identifier.	
HL7au:000034.3	Senders	Results, Referrals	When using CE, CWE, CNE data types in an OBX segment, In either OBX-3 (Observation Identifier) or as an Observation Value, if the system transmits both a public (e.g. LOINC) and a local terminology, then concepts from the different terminologies must convey the same clinical meaning. Generally this means there is no need to populate the Alternate Text field.	
HL7au:000034.4	Receivers	Results	Receivers must recognize Result and Report comment LOINC codes and Template ID/Section Header LOINC codes and display appropriately.	See 4.6 Specific LOINC codes
(HL7au:000040)	**MSH-12 Version ID Field Conformance Points**			
HL7au:000040.1	Senders	Orders, Results, Referrals, ACK, RRI	Senders conforming to this specification must specify "2.4" as the value of version ID (ID) component of MSH-12 Version ID (VID)	
HL7au:000040.2 (r2)	Senders	Orders, Results, Referrals, ACK, RRI	MSH-12 Version ID <internationalization code (CE)> component must be valued "AUS&Australia&ISO3166_1"	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000040.3	Senders	Orders, Results	MSH-12 Version ID <internal version ID (CE)> component must be valued as "HL7AU-OO-201701&&L". (Note that the number scheme used in this identifier is HL7 date format: YYYYMM)	** errata
HL7au:000040.4 (r2)	Senders	Referrals, RRI	MSH-12 Version ID <internal version ID (CE)> component must be valued as "HL7AU-OO-REF-SIMPLIFIED-201706&&L" (for Level 2) or "HL7AU-OO-REF-SIMPLIFIED-201706-L1&&L" (for Level 1). (Note that the number scheme used in this identifier is HL7 date format: YYYYMM)	The RRI should echo the received MSH-12 <internal version (ID)>. This is a hint to the SMD agent as to the service category to be used.
HL7au:000040.5	Receivers	Orders, Results, Referrals	Receiving systems must use MSH-12 to affect the behaviour of message processing, when supporting various versions of the HL7 message standards and profiles.	
HL7au:000041 (r2)	Senders	Orders, Results, Referrals, ACK, RRI	The country of origin of the message must be specified in MSH-17 Country code. For Australian originators the value must be "AUS".	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000042	Senders	Orders, Results, Referrals, ACK, RRI	MSH-19 must be valued as "en^English^ISO639".	
(HL7au:000043)	**MSH-4 Sending Facility conformance points**			
HL7au:000043.1	Senders	Orders, Results, Referrals	MSH-4 – Sending Facility must be filled in with the sending facility HPI-O when sending a message via Secure Message Delivery (SMD) and secured by NASH Certificates. The format must be "registered organisation name in HI service^1.2.36.1.2001.1003.0.<hpio>^ISO" where <hpio> is a 16-digit number. The identifier is essentially used to locate the endpoint of the sending facility and will be used by the receiving facility to return an acknowledgement.	** errata was inconsistent with 44.2.1
HL7au:00043.2	Receivers	Orders, Results, Referrals	MSH-4 – Sending Facility when using SMD with NASH certificates must be validated against the SMD sending organisation. The message must be rejected if the SMD certificate does not match. (This is an anti spoofing check)	** This conformance point applies only to SMD Agent implementers, this check should be performed before handing off a the message to the receiving system.

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00043.3 (r2)	Senders	Orders, Results, Referrals	When SMD is used with vendor based certificates and identifiers, then the components of the MSH-4 HD must match with content of the sender as valued in the provider directory and also as identified in the sender's X.509 certificate.	
HL7au:00043.4 (r2)	Senders	Orders, Results, Referrals	When SMD is used with vendor based certificates and identifiers, then the components of the MSH-6 HD must match with content of the receiver as valued in the provider directory and also as identified in the receiver's X.509 certificate.	need detailed component mapping from directory and x.509 certs
(HL7au:00044)	**Datatype conformance points**			
HL7au:00044.0.1	Senders	Orders, Results, Referrals	User defined datatypes are prohibited in all segment fields, components, and subcomponents. (Note that this prohibits the use of user defined datatypes in variable datatype fields such as OBX-5).	
(HL7au:00044.1)	**CX datatype conformance points**			
HL7au:00044.1.1	Senders	Orders, Results, Referrals	CX <ID (ST)> component must be specified and valid according to the identifier scheme of selected by the Identifier type code and Assigning Authority components.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00044.1.2 (r2)	Senders	Orders, Results, Referrals	CX <assigning authority (HD)> component must be valued and must conform to sub points of *HL7au:00044.2.*	
HL7au:00044.1.3	Senders	Orders, Results, Referrals	CX <identifier type code (ID)> component must be valued with a valid value from HL7 Table 0203 - Identifier type (see page 301).	
(HL7au:00044.2)	**HD Datatype conformance points for MSH-4, and MSH-6**			
HL7au:00044.2.1 (r2)	Senders	Orders, Results, Referrals	When using SMD with NASH certificates the HD Namespace ID component must contain the registered organisation name as registered by in the Medicare Australia HPOS/HI service.	
HL7au:00044.2.2 (r2)	Senders	Orders, Results, Referrals	When using SMD with NASH certificates the HD Universal ID component must contain the HPI-O formatted as "1.2.36.1.2001.1003.0." concatenated with the HPI-O.	
HL7au:00044.2.3 (r2)	Senders	Orders, Results, Referrals	When using SMD with NASH certificates the HD Universal ID Type component must be "ISO".	
HL7au:00044.2.4	Senders	Orders, Results, Referrals	When SMD is used with vendor based certificates and identifiers, then the components of the HD must match with content of the receiver as valued in the provider directory and also as identified in the organisation's X.509 certificate.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
(HL7au:00044.3)	**EI datatype conformance points**			
HL7au:00044.3.1 (r2)	Senders	Orders, Results, Referrals	The EI Entity identifier component must be valued and for each document/report must be unique within the sender facility namespace (HD).	
HL7au:00044.3.2 (r2)	Senders	Orders, Results, Referrals	When using SMD with NASH certificates the EI Namespace ID component must contain the registered organisation name as registered by in the Medicare Australia HPOS/HI service.	
HL7au:00044.3.4 (r2)	Senders	Orders, Results, Referrals	When using SMD with NASH certificates the EI Universal ID component must contain the HPI-O formatted as "1.2.36.1.2001.1003.0." concatenated with the HPI-O.	
HL7au:00044.3.3 (r2)	Senders	Orders, Results, Referrals	When using SMD with NASH certificates the EI Universal ID Type component must be "ISO".	
HL7au:00044.3.4	Senders	Orders, Results, Referrals	When SMD is used with vendor based certificates and identifiers, then the components of the HD must match with content of the receiver as valued in the provider directory and also as identified in the organisation's X.509 certificate.	
(HL7au:00044.4)	**CE datatype conformance points**			

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00044.4.1	Senders	Orders, Results, Referrals	When an <identifier (ST)> component is specified, the <name of the coding system> must also be specified.	
HL7au:00044.4.2	Senders	Orders, Results, Referrals	If no <identifier (ST)> component is specified then no <name of coding system> (primary coding system) must be specified	
HL7au:00044.4.3	Senders	Orders, Results, Referrals	<text (ST)> component must be valued as what is intended for display to the user. (In some locations user display is not intended and the text may be blank.)	
HL7au:00044.4.4	Senders	Orders, Results	When multiple codes are used LOINC codes (LN) must be placed first using the identifier rather than the alternate identifier.	
HL7au:00044.4.5	Senders	Orders, Results, Referrals	When an <alternate identifier (ST)> component is specified, the <name of alternate coding system> must also be specified.	
HL7au:00044.4.6	Senders	Orders, Results, Referrals	If no <alternate identifier (ST)> component is specified then no <name of alternate coding system> must be specified	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00044.4.7	Senders	Orders, Results, Referrals	Both <identifier> and <alternative identifier> must reflect the same concept in each of the primary and alternate coding system respectively. Each code may reflect differing levels of granularity within each coding system as the level of granularity differs between coding systems.	
HL7au:00044.4.8	Senders	Orders, Results, Referrals	Alternate coding system must be a different from the primary coding system. As the two codes must describe the same concept the alternate text is optional.	
(HL7au:00044.5)	**CNE datatype conformance points**			
HL7au:00044.5.1	Senders	Orders, Results, Referrals	An <identifier (ST)> component is specified, the <name of the coding system> must also be specified.	
HL7au:00044.5.2	Senders	Orders, Results, Referrals	If no <identifier (ST)> component is specified then no <name of coding system> must be specified	
HL7au:00044.5.3	Senders	Orders, Results, Referrals	<text (ST)> component must be valued and this must be what is intended for display to the user.	
HL7au:00044.5.4	Senders	Orders, Results, Referrals	When an <alternate identifier (ST)> component is specified, the <name of alternate coding system> must also be specified.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00044.5.5	Senders	Orders, Results, Referrals	If no <alternate identifier (ST)> component is specified then no <name of alternate coding system> must be specified	
HL7au:00044.5.6 (r2)	Senders	Orders, Results, Referrals		Removed
HL7au:00044.5.7	Senders	Orders, Results, Referrals	Both <identifier> and <alternative identifier> must reflect the same concept in each of the primary and alternate coding system respectively. Each code may reflect differing levels of granularity within each coding system as the level of granularity differs between coding systems.	
(HL7au:00044.6)	**CWE datatype conformance points**			
HL7au:00044.6.1	Senders	Orders, Results, Referrals	When an <identifier (ST)> component is specified, the <name of the coding system> must also be specified.	
HL7au:00044.6.2	Senders	Orders, Results, Referrals	If no <identifier (ST)> component is specified then no <name of coding system> must be specified	
HL7au:00044.6.3	Senders	Orders, Results, Referrals	<text (ST)> component must be valued and this must be what is intended for display to the user.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00044.6.4	Senders	Orders, Results, Referrals	When an <alternate identifier (ST)> component is specified, the <name of alternate coding system> must also be specified.	
HL7au:00044.6.5	Senders	Orders, Results, Referrals	If no <alternate identifier (ST)> component is specified then no <name of alternate coding system> must be specified	
HL7au:00044.6.6 (r2)	Senders	Orders, Results, Referrals		Removed
HL7au:00044.6.7	Senders	Orders, Results, Referrals	Both <identifier> and <alternative identifier> must reflect the same concept in each of the primary and alternate coding system respectively. Each code may reflect differing levels of granularity within each coding system as the level of granularity differs between coding systems.	
(HL7au:00044.7)	**XCN datatype conformance points**			
HL7au:00044.7.1	Senders	Orders, Results, Referrals	XCN <ID (ST)> component must be specified and valid according to the identifier scheme of selected by the Identifier type code and Assigning Authority components.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00044.7.2	Senders	Orders, Results, Referrals	XCN <assigning authority (HD)> component must be valued and valid.	
HL7au:00044.7.3	Senders	Orders, Results, Referrals	XCN <name type code (ID)> component must be valued and valid from HL7 Table 200.	
HL7au:00044.7.4	Senders	Orders, Results, Referrals	XCN <identifier type code (ID)> component must be valued with a valid value from HL7 Table 203.	
HL7au:00044.7.5	Senders	Orders, Results, Referrals	XCN <family name (FN)> :<surname (ST)> sub-component must to be valued.	
HL7au:00044.7.6	Senders	Orders, Results, Referrals	XCN <given name (ST)> should be valued.	
(HL7au:00044.8)	**TS datatype conformance points**			
HL7au:00044.8.1	Senders	Orders, Results, Referrals	Correct timezone must be specified	
(HL7au:00044.10)	**ED datatype conformance points**			
(HL7au:00044.10.1)	**ED datatype - Senders**			
HL7au:00044.10.1.1	Senders	Results, Referrals	ED <type of data (ID)> must be valued.	
HL7au:00044.10.1.2	Senders	Results, Referrals	ED <data subtype (ID)> must be valued.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00044.10.1.3	Senders	Results, Referrals	ED <encoding (ID)> must be valued.	
HL7au:00044.10.1.4	Senders	Results, Referrals	ED <data (ST)> must be valued.	
HL7au:00044.10.1.5	Senders	Results, Referrals	When the ED <subtype (ID)> component is valued with a MIME sub-type value, then the corresponding MIME type must be used in the <Type of data (ID)> component.	
HL7au:00044.10.1.6	Senders	Results, Referrals	When the ED <subtype (ID)> component is valued with a HL7 2.4 defined <Subtype (ID)> (Table 0291) value, then the corresponding HL7 2.4 type of data (Table 0191) must be used in the <Type of data (ID)> component.	
(HL7au:00044.10.2)	**ED datatype - Receivers**			
HL7au:00044.10.2.1	Receivers	Results, Referrals	Receivers must process <type of data (ID)> component case insensitively.	
HL7au:00044.10.2.2	Receivers	Results, Referrals	Receivers must process <data subtype (ID)> case insensitively.	
HL7au:00044.10.2.3	Receivers	Results, Referrals	Receivers must process the <encoding (ID)> component case insensitively.	
(HL7au:00044.11)	**RP datatype conformance points**			

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
(HL7au:00044.11.1)	**RP datatype (senders)**			
HL7au:00044.11.1.1	Senders	Results, Referrals	RP <pointer (ST) > component must be valued	
HL7au:00044.11.1.2	Senders	Results, Referrals	RP <application ID (HD)> component must be valued	
HL7au:00044.11.1.3	Senders	Results, Referrals	RP <type of data (ID)> component must be valued	
HL7au:00044.11.1.4	Senders	Results, Referrals	RP <subtype (ID)> component must be valued	
HL7au:00044.11.1.5	Senders	Results, Referrals	When the RP <subtype (ID)> component is valued with a MIME sub-type value, then the corresponding MIME type must be used in the <Type of data (ID)> component.	
HL7au:00044.11.1.6	Senders	Results, Referrals	When the RP <subtype (ID)> component is valued with a HL7 2.4 defined <Subtype (ID)> (Table 0291) value, then the corresponding HL7 2.4 type of data (Table 0191) must be used in the <Type of data (ID)> component.	
HL7au:00044.11.1.7 (r2)	Receivers	Results, Orders, Referrals	Receivers must understand that a LOINC code of 60572-5 (Report Template ID) signifies the identifier of the report template used to structure the data and not render as patient data.	See 4.6 Specific LOINC codes

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
(HL7au:00044.11.1.5)	**Encoding URLs into RP datatype**			
HL7au:00044.11.1.5.1	Senders	Results, Referrals	When "URI" is specified in RP <application ID (HD)> component - <universal id type (ID)> sub-component value: the URL must be specified by the concatenation of the RP <application ID (HD)> component, <universal id (ST)> sub-component followed by the RP <pointer (ST)>.	
HL7au:00044.11.1.5.2	Senders	Results, Referrals	When "URI" is specified in RP <application ID (HD)> component - <universal id type (ID)> sub-component value: the RP <application ID (HD)> component-<namespace id (IS)> sub-component must not be valued.	
HL7au:00044.11.1.5.3	Senders	Results, Referrals	When "URI" is specified in RP <application ID (HD)> component - <universal id type (ID)> sub-component value: the RP <application ID (HD)> component, <universal id (ST)> sub-component must be the *scheme* / *server* and *application path* parts of the URL.	
(HL7au:00045)	**Message Acknowledgement**			

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00045.1	Receivers	Orders	Receivers of a valid ORM Order messages must produce an application level acknowledgement - order response message ORR and transmit it back to the original sender, when specified by MSH-16.	
HL7au:00045.2	Receivers	Results	Receivers of valid ORU result messages must produce an application level acknowledgement - ACK^R01 and transmit it back to the original sender, when specified by MSH-16.	
HL7au:00045.3	Receivers	Orders, Results, Referrals	Receiving systems unable to process a HL7 message must produce the appropriate reject or error application level application level acknowledgement and transmit it back to the sender, provided that the message has a valid MSH and Sending Facility and MSH Control ID field.	
HL7au:00045.4 (r2)	Receivers	Referrals	Receivers of valid (parsable) REF^I12 result messages must produce an application level acknowledgement - RRI^I12 and transmit it back to the original sender.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000 45.5	Senders	Referrals	Senders of REF^I12 messages must have the capacity to receive and process RRI^I12 referral response (acknowledgement) messages and indicate success to the sender of the message, and report failures indicated in the response.	
HL7au:000 45.6	Senders	Referrals	Senders of REF^I12 messages must publish in their secure messaging directory their capability to receive RRI^I12 acknowledgement messages.	
HL7au:00045.7 (r2)	Senders	Referrals	Secure messaging agents must ensure that there is a valid referral response entry in their provider directory before proceeding to transmit the message. If not, the sending SMD agent must produce an error acknowledgement and return it to the sending application. When using Australian Profile for Provider Directory Services[103], the sending SMD agent must ensure that it has registered endpoints containing au-receivingfacility[104] that match the outbound message's MSH-4 and au-receivingapplication[105] match MSH-3.	

103 http://hl7.org.au/fhir/pd/pd2
104 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-sm-endpoint-definitions.html#Endpoint.extension:receivingFacility
105 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-sm-endpoint-definitions.html#Endpoint.extension:receivingApplication

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:000 45.8	Receivers	Orders, Results, Referrals, Acknowledgement, Referral Response	Receivers must copy exactly all components of the received message's MSH-3 Sending Application field into the MSH-5 Receiving Application field of the acknowledgement / response message that they produce.	
HL7au:000 45.9	Receivers	Orders, Results, Referrals, Acknowledgement, Referral Response	Receivers must copy exactly all components of the received message's MSH-4 Sending Facility field into the MSH-6 Receiving Facility field of the acknowledgement / response message that they produce.	
(HL7au:00046)	**General HL7**			
(HL7au:00046.1)	**Sender Escaping Rules**			
HL7au:00046.1.1	Senders	Orders, Results, Referrals	Senders must escape | characters as '\F\' in all fields, components, subcomponents	
HL7au:00046.1.2	Senders	Orders, Results, Referrals	Senders must escape '^' characters as '\S\' in all HL7 fields, components and subcomponents	
HL7au:00046.1.3	Senders	Orders, Results, Referrals	Senders must escape '&' characters as '\T\' in all HL7 fields, components and subcomponents	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00046.1.4	Senders	Orders, Results, Referrals	Senders must escape '~' characters as '\R\' in all HL7 fields, components and subcomponents	
HL7au:00046.1.5 (r2)	Senders	Orders, Results, Referrals	Senders must escape '\' characters as '\E\' in all HL7 fields, components and subcomponents	** errata - Previous versions incorrectly stated the wrong sequence to use.
(HL7au:00046.2)	**Receiver Escaping Rules**			
HL7au:00046.2.1	Receivers	Orders, Results, Referrals	Receivers must unescape '\F\' escape sequences to character '|' for all fields, components, subcomponents	
HL7au:00046.2.2	Receivers	Orders, Results, Referrals	Receivers must unescape '\S\' escape sequences to character '^' for all fields, components, subcomponents	
HL7au:00046.2.3	Receivers	Orders, Results, Referrals	Receivers must unescape '\T\' escape sequences to character '&' for all fields, components, subcomponents	
HL7au:00046.2.4	Receivers	Orders, Results, Referrals	Receivers must unescape '\R\' escape sequences to character '~' for all fields, components, subcomponents	
HL7au:00046.2.5	Receivers	Orders, Results, Referrals	Receivers must unescape '\E\' escape sequences to character '\' for all fields, components, subcomponents	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00046.3	Senders	Orders, Results, Referrals	All fields required by HL7 segments table must be validly valued.	
HL7au:00046.4 (r2)	Receivers	Orders, Results, Referrals	Receiving implementations when receiving HL7 messages and converting their contents to data values must ignore fields, components, sub-components, and extra repetitions of a field that are present but were not expected.	*Varied from HL7 2.4 2.11
HL7au:00046.5 (r2)	Receivers	Orders, Results, Referrals	Receiving implementations when receiving HL7 messages and converting their contents to data values must treat segments that were expected but are not present as an error.	*Varied from HL7 2.4 2.11
HL7au:00046.6	Receivers	Orders, Results, Referrals	Receiving implementations when receiving HL7 messages and converting their contents to data values must treat fields and components that are expected but were not included in a segment as not present.	HL7 2.4 2.11
HL7au:00047.1	Senders	Orders, Results, Referrals	MSH-15 Accept acknowledgement type (ID) must be valued AL	
HL7au:00047.2	Senders	Orders, Results, Referrals	MSH-16 Application acknowledgement type (ID) must be valued AL	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00048.1	Senders	Orders, Results, Referrals	When MSH-18 is unvalued or valued as "ASCII" the message must contain only characters in the range ASCII 32 to ASCII 127 and cursor return ASCII 13 which must only be used as segment separator.	
HL7au:00048.2	Senders	Orders, Results, Referrals	When MSH-18 is valued and is not "ASCII" encoding the message must not contain characters less than ASCII 32, except for ASCII 13 which must only be used as segment separator.	
HL7au:00048.3.1 (r3)	Senders	Orders, Results, Referrals	MSH-18 must only contain one of the following values "", "ASCII" or by site agreement "UNICODE UTF-8", "8859/1" may be used.	It is hoped to allow "UNICODE UTF-8" in a future version, but this depends on widespread receiver support. Receivers are encouraged to develop capability for UTF-8. ** errata "UNICODE UTF-8" was incorrectly added as "UTF-8"
HL7au:00048.3.2 (r1)				Deleted. Merged into HL7au:00048.3.1 (r3)
HL7au:00048.3.3	Senders	Orders, Results, Referrals	The encoding of characters in the message must match the value specified in MSH-18	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00048.4	Senders	Orders, Results	When "UNICODE" is specified in MSH-18 a byte order mark (BOM) must be present at the start of the transmission.	Refer to 2.1.9.18 MSH-18 Character set (ID) 00692. Note that UNICODE is deprecated.
HL7au:00049.1	Senders	Orders, Results, Referrals	MSH-9 Message type <message type (ID)> component must be valued.	
HL7au:00049.2	Senders	Orders, Results, Referrals	MSH-9 Message type <trigger event (ID)> component must be valued.	
HL7au:00049.3	Senders	Orders, Results, Referrals	MSH-9 Message type <message structure (ID)> component must be valued.	
HL7au:00050.1	**Pathology Sending**			
HL7au:00050.1.2	Senders (Pathology only)	Results	When sending pathology messages OBX-3 must be valued according to the APUTS[106]standard where a code is available.	
HL7au:00050.1.3	Senders (Pathology only)	Results	The OBX-6 (Units) <text (ST)> component of the primary identifier must be valued according to APUTS preferred unit for the term.	
HL7au:00050.1.4	Senders (Pathology only)	Results	The OBX-6 (Units) <identifier (ST)> component of the primary must be the case sensitive UCUM code.	

106 https://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00050.1.5	Senders (Pathology only)	Results	The OBX-6 (Units) <name of coding system (IS)> component must be "UCUM".	
HL7au:00050.1.6	Senders (Pathology only)	Results	The OBX-7 References range (ST) should be valued as the APUTS harmonised reference intervals where defined and applicable.	
HL7au:00050.1.7	Senders (Pathology only)	Results	Display segments must be produced according to the APUTS Chapter 7 rendering rules.	
HL7au:00050.2.1	Receivers	Results	Where a receiving system renders an atomic pathology result it must comply with the rendering APUTS Chapter 7 rendering rules.	
HL7au:00050.2.2	Receivers	Results	When rendering a cumulative table or graph of pathology data, do not combine series which have different LOINC codes or have the "Do not combine" flag indicated in any repeat of OBX-17 which is indicated by "765921000168105^Do not combine laboratory test result^SCT".	See 4.13
HL7au:00060.1	Senders	Orders, Results, Referrals	HL7 message elements with a usage of R (required) must be valued.	
HL7au:00060.2	Senders	Orders, Results, Referrals	HL7 message elements with a usage of RE (required or empty) must be valued, except if the data is unknown to the sending application.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00060.3	Senders	Orders, Results, Referrals	HL7 message elements with a usage of C (conditional) must be valued when the associated predicate is satisfied.	From HL7 Conformance Implementation Manual[107].
HL7au:00060.4	Senders	Orders, Results, Referrals	HL7 message elements with a usage of C (conditional) must not be valued when the associated predicate is not satisfied.	From HL7 Conformance Implementation Manual[108].
HL7au:00060.5	Senders	Orders, Results, Referrals	HL7 message elements with a usage of CE (condition or empty) must be valued when known to the application, and must be unvalued when the application does not know the value.	
HL7au:00060.6	Senders	Orders, Results, Referrals	Sending application must be capable of knowing which conditional elements to populate when conditional rules (predicate) are satisfied for conditional or empty elements.	Adapted from HL7 Conformance Implementation Manual[109].
HL7au:00060.7	Senders	Orders, Results, Referrals	HL7 message elements with a usage of CE (condition or empty) must not be valued when the associated predicate (conditional rule) is not satisfied.	Adapted from HL7 Conformance Implementation Manual[110].

107 http://wiki.hl7.org/index.php?title=Conformance_Implementation_Manual
108 http://wiki.hl7.org/index.php?title=Conformance_Implementation_Manual
109 http://wiki.hl7.org/index.php?title=Conformance_Implementation_Manual
110 http://wiki.hl7.org/index.php?title=Conformance_Implementation_Manual

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00061.1	Receivers	Orders, Results, Referrals	If a HL7 message element with a usage of CE is not present, the receiving application shall not raise an error due to the presence or absence of the element.	
HL7au:00100.1 (r2)	Senders	Referrals	The current referral summary OBR/OBX group must appear as the first OBR/OBX group in the message.	
HL7au:00100.2	Receivers	Referrals(L2)	The receiver when displaying the inbound referral, must primarily show the content of a referral letter display segment belonging the Clinical Information for the referral OBR/OBX group indicated by the OBR-4 code as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212).	
HL7au:00100.3 (r3)	Receivers	Referrals(L2)	The receiver must also show clearly that there is supporting information for the referral and allow the user to view those, each must have a either a PDF/HTML/TXT/RTF display segment.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00101.1 (r2)	Senders	Results, Referrals(L2)	Each OBR/OBX group may contain arbitrary encapsulated data attachments as per 4.26 Non-Displayable Supporting data (see page 274).	
HL7au:00101.2	Senders	Results, Referrals(L2)	Encapsulated data attachments must use Base64 encoding.	
HL7au:00101.3	Senders	Results, Referrals(L2)	Senders must not send critical data in encapsulated data attachments, since it may be unreliable in that the MIME type may be unsupported by the receiver and content unviewable.	
HL7au:00101.4 (r2)	Receivers	Results, Referrals(L2)	While displaying the content for each OBR/OBX group any encapsulated data attachments as described in 4.26 Non-Displayable Supporting data (see page 274) must be listed to the user.	
HL7au:00101.5	Receivers	Results, Referrals(L2)	Encapsulated data attachments listed to the user in the previous point must be accessible to the user if a suitable viewer for the MIME type and MIME subtype is available on the system.	
HL7au:00101.6	Receivers	Results, Referrals(L2)	Receivers must support viewing attachments with MIME type/subtype of application/pdf and text/html.	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00101.7	Receivers	Results, Referrals(L2)	Receivers may support encapsulated data attachments MIME type/subtype such as OpenXML Documents: application/vnd.openxmlformats-officedocument.wordprocessingml.document application vnd.openxmlformats-officedocument.spreadsheetml.sheet	
HL7au:00101.8	Receivers	Results, Referrals(L2)	Receiver systems must restrict access to attachments of trusted MIME types (the trusted MIME types may be configurable according to an organisation policy).	
HL7au:00102.1.2 (r2)	Senders	Referrals	For the "Referral Summary" OBR/OBX group (indicated by the OBR-4 code as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212)) in the referral message, the Report template ID OBX must be included when atomic data is to be provided and it must specify the unique root sub id in OBX-4 subID. e.g. sub id "1"	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00102.2.1 (r2)	Senders	Referrals	For the "Referral Summary" OBR/OBX group (indicated by the OBR-4 code as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212)) in the referral message, atomic data must be sent in OBXs with their appropriate OBX-2 value as specified the method specified in Appendix 9 HL7v2 Virtual Medical Record (Normative) (see page 490)	
HL7au:00102.2.2 (r2)	Senders	Referrals	For the "Referral Summary" OBR/OBX group (indicated by the OBR-4 code as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212)) in the referral message, atomic data must be sent in OBXs with their appropriate OBX-3 value as specified the method specified in Appendix 9 HL7v2 Virtual Medical Record (Normative) (see page 490)	
HL7au:00102.2.3 (r2)	Senders	Referrals	For the "Referral Summary" OBR/OBX group (indicated by the OBR-4 code as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212)) in the referral message, atomic data must be sent in OBXs with their appropriate OBX-4 subID value relative to the subID specified in the Report template ID OBX as specified the method specified in Appendix 9 HL7v2 Virtual Medical Record (Normative) (see page 490)	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00103.3 (r2)	Senders	Referrals	For the current "Referral Summary" OBR/OBX group (indicated by the OBR-4 code as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212)) in the referral message, the display segment must reflect content from taht OBR/OBX group as well as the Allergies, and Medication segments of the REF message.	
HL7au:00104.1.1	Senders	Referrals	There must be exactly one PRD with a PRD-1 value of "AP" (Authoring Provider) in the REF message.	
HL7au:00 104.1.1	Receivers	Referrals	The receiving system must identify the authoring provider in its display of the message content (indicated by "AP" in the associated PRD-1).	
HL7au:00 104.2.1	Senders	Referrals	There must be exactly one PRD with a PRD-1 value of "IR" (Intended Recipient) in the REF message.	
HL7au:00 104.2.2	Receivers	Referrals	The receiving system must present the referral message to intended recipient indicated by PRD-1 value of "IR".	
HL7au:00104.7.0 (r3)	Senders	Referrals	PRD-7 must have at least 1 repeat (for providers receiving electronic communication specified by IR - Intended Recipient in PRD-1).	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00104.7.1.2	Senders	Referrals	PRD-7 <ID number (ST)> must be valued with a location or organisationally scoped identifier (for providers receiving electronic communication).	
HL7au:00104.7.1.3 (r2)	Senders	Referrals	PRD-7 <ID number (ST)> must not contain an HPI-I value (for providers receiving electronic communication).	HPI-I values must be qualified by the HPI-O. See NPIO in HL7 Table 0203 - Identifier Type (see page 301).
HL7au:00104.7.1.4	Senders	Referrals	For a PRD-7 <ID number (ST)> the correct matching <type of ID number (IS)> and <other qualifying info (ST)> must be used as per table Table 7.3.3.7.1 - Valid PRD-7 component matches (see page 334)	
HL7au:00104.7.2.1	Senders	Referrals	PRD-7 <type of ID number (IS)> must be valued from User-defined Table 0363 - Assigning Authority (see page 310).	
HL7au:00104.7.3.1	Senders	Referrals	<other qualifying info (ST)> must be a valued from HL7 Table 0203 - Identifier Type (see page 301).	

HL7au Identifier	Applicable to Senders/Receivers/ Both	Message Type Applicability	Conformance point text	Comments
HL7au:00110.1	Senders	Orders, Results, Referrals, Acknowledgment, Referral Response	Senders must populate the MSH-3 Sending application (HD) field components as per the values specified in the provider directory of their secure messaging system being used.	The intent of this point is to enable a receiver the ability to lookup the sender in the directory, which will allow return messaging. This also applies to senders of acknowledgements.
HL7au:00110.2	Senders	Orders, Results, Referrals, Acknowledgment, Referral Response	Senders must populate the MSH-4 Sending facility (HD) field components as per the values specified in the provider directory of their secure messaging system being used.	The intent of this point is to enable a receiver the ability to lookup the sender in the directory, which will allow return messaging. This also applies to senders of acknowledgements.

** note that regular browsers do not support this feature directly, xhtml preprocessing is required before display with browser

Appendix 6 Example Messages (Informative)

6.1 Pathology Reports Examples

6.2 Patient Referral Examples

These messages are provided in two separate zip file bundles.

In this zip bundle there are some complex REF^I12 example messages.

There are examples for two Referral profiles:

Level 1 - containing a single OBR/OBX group and a PDF display segment.[111]

Level 2 - containing multiple OBR/OBX groups and a variety of display segments[112]

Please see the readme.txt file in each bundle for more information and description of the examples and expected display outputs.

6.3 SPIA Examples

Exemplar rendered reports from each pathology discipline together with CDA and HL7 representations are available from the RCPA PITUS-18-20 project.

See the SPIA Exemplar Reports section on the following page:

https://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/PITUS-18-20

Example: Structured Prostate Cancer Histopathology Report

NB. The Base64 PDF content in the example below has been cut. Refer to the following to link for a full example. 20180807 - ProstateExample3-PDF.ORU[113]

```
MSH|^~\&|MOADLEDIT^MOADLEDIT:3.1.2 (Build 6381) [win32-i386]^L|
Unassigned^8D9FE669-4710-455D-8B97-811508B616E7^GUID|||20161019162427+1100||ORU^R01^ORU_R01|
XX10191624300-4735|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-201701&&L|||AL|AL|AUS||en^English^ISO639
PID|1||||CITIZEN^GEORGE||19640701|M|||C/o Paradise Close^^NAR NAR GOON^VIC^3812^AUS
```

111 https://confluence.hl7australia.com/download/attachments/31590239/REF%20Examples%201.9%20Level%201.zip?api=v2&modificationDate=1625630094023&version=1

112 https://confluence.hl7australia.com/download/attachments/31590239/REF%20Examples%201.9%20Level%202.zip?api=v2&modificationDate=1625630094522&version=1

113 https://confluence.hl7australia.com/download/attachments/31590255/20180807%20-%20ProstateExample3-PDF.ORU?api=v2&modificationDate=1625630098429&version=1

```
PV1|1|O|||||||419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN
ORC|RE||92D0CE50-173A-4A2F-A3B1-6165376F222B^Unassigned^8D9FE669-4710-455D-8B97-811508B616E7^GUID||
CM|||||||419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN
OBR|1||92D0CE50-173A-4A2F-A3B1-6165376F222B^Unassigned^8D9FE669-4710-455D-8B97-811508B616E7^GUID|84908
-3^Prostate Cancer Histopathology^LN||20161019+1100|20161019+1100|||||||||
419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN||||LN=92D0CE50-173A-4A2F-A3B1-6165376F222B||
201610191609+1100||PHY|F||^^^20161019+1100|
419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN~921198YF^SMITH^MICHAEL^^^DR^^^AUSHICPR^L^^^UPIN
OBX|1|RP|60572-5^^LN^ENTRY^^EN 13606|1|CEN.RCPA-ProstateCancer_(Rad_Prostatectomy).v2^Prostate Cancer
Histopathology&99A-F4ADB3A91A896333&L^TX^Octet-stream||||||F
OBX|2|CE|70949-3^^LN^CLUSTER^^EN 13606|1.1|70949-3^Clinical details^LN||||||F
OBX|3|ST|29306-8^Surgical procedure^LN|1.1.2|Radical prostatectomy||||||F
OBX|4|ST|55752-0^Clinical information^LN|1.1.4|PCa G6 - prostate and seminal vesicles - left and right
pelvic nodes - pre-prostatic fat - left apical margin - left lateral margin||||||F
OBX|5|NM|2857-1^Pre-biopsy serum PSA^LN|1.1.6|5.9|ug/L^^ISO+|||||F
OBX|6|ST|LN-RCPA-00085^Relevant clinical information for clinicopathological staging^L|1.1.8|Core biopsy
Gleason score: 3+3=6||||||F
OBX|7|ST|57723-9^Pathology accession number^LN|1.1.9|89470-15MP||||||F
OBX|8|ST|18600-7^Principal clinician^LN|1.1.10|Dr Smith||||||F
OBX|9|CE|70949-3^^LN^CLUSTER^^EN 13606|1.2|70949-3^Macroscopic findings^LN||||||F
OBX|10|NM|29638-4^Specimen weight^LN|1.2.1|60|g^^ISO+|||||F
OBX|11|CE|70949-3^^LN^CLUSTER^^EN 13606|1.2.2|LN-RCPA-00086^Specimen dimensions (prostate)^L||||||F
OBX|12|NM|LN-RCPA-00100^Length^L|1.2.2.1|51|mm^^ISO+|||||F
OBX|13|NM|LN-RCPA-00101^Width^L|1.2.2.2|47|mm^^ISO+|||||F
OBX|14|NM|LN-RCPA-00102^Thickness^L|1.2.2.3|42|mm^^ISO+|||||F
OBX|15|CE|LN-RCPA-00087^Seminal vesicles^L|1.2.3|at0196^Present^99A-F4ADB3A91A896333||||||F
OBX|16|CE|LN-RCPA-00088^Lymph nodes^L|1.2.4|52101004^Present^SCT||||||F
OBX|17|CE|20228-3^Laterality^LN|1.2.5|51440002^Bilateral^SCT||||||F
OBX|18|CE|70949-3^^LN^CLUSTER^^EN 13606|1.2.6.1|at0024^Site(s) and numbers of lymph nodes^99A-
F4ADB3A91A896333||||||F
OBX|19|ST|39111-0^Site^LN|1.2.6.1.1|Left pelvic||||||F
OBX|20|NM|21894-1^Number of LNs from this site^LN|1.2.6.1.2|1||||||F
OBX|21|ST|39111-0^Site 2^LN|1.2.6.1.3|Right pelvic||||||F
OBX|22|NM|21894-1^Number of LNs from this site^LN|1.2.6.1.4|1||||||F
OBX|23|ST|22634-0^Additional macroscopic  comments^LN|1.2.8|Volume: 0.6cm3 (3D volume estimate
method)||||||F
OBX|24|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3|70949-3^Microscopic findings^LN||||||F
OBX|25|CE|44639-3^Histological tumour type^LN|1.3.1|45410002^Adenocarcinoma (Acinar, usual type)^SCT||||||F
OBX|26|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3.4|at0093^Tumour location^99A-F4ADB3A91A896333||||||F
OBX|27|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3.4.4|LN-RCPA-00092^Locations by quadrant^L||||||F
OBX|28|CE|264176005^Right anterior^SCT|1.3.4.4.1|31874001^Yes^SCT||||||F
OBX|29|CE|277593009^Right posterior^SCT|1.3.4.4.2|31874001^Yes^SCT||||||F
OBX|30|CE|264065008^Left anterior^SCT|1.3.4.4.3|31874001^Yes^SCT||||||F
OBX|31|CE|277594003^Left posterior^SCT|1.3.4.4.4|31874001^Yes^SCT||||||F
OBX|32|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3.4.5|LN-RCPA-00090^Locations by plane^L||||||F
OBX|33|CE|68756004^Apex^SCT|1.3.4.5.1|64100000^No^SCT||||||F
OBX|34|CE|279704000^Mid^SCT|1.3.4.5.2|64100000^No^SCT||||||F
OBX|35|CE|36082003^Base of prostate^SCT|1.3.4.5.3|64100000^No^SCT||||||F
OBX|36|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3.7|372278000^Histological tumour grade^SCT||||||F
OBX|37|NM|44641-9^Primary Gleason grade^LN|1.3.7.1|3||||||F
OBX|38|NM|44642-7^Secondary Gleason grade^LN|1.3.7.2|4||||||F
OBX|39|CE|385432009^Tertiary Gleason grade not applicable^SCT|1.3.7.4|64100000^No^SCT||||||F
```

```
OBX|40|FT|35266-6^Gleason score^LN^372278000^^SCT|1.3.7.5|3+4=7\.br\Composite Gleason Score (ISUP) 2005):
3+4=7 \.br\Index carcinoma score (ISUP 2005): 3+4=7 % \.br\High Grade (4/5): 5%. \.br\Intraduct carcinoma:
Absent.||||||F
OBX|41|CE|LN-RCPA-00096^Extent^L|1.3.9|420366008^Focal^SCT||||||F
OBX|42|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3.10|LN-RCPA-00095^Location(s) of EPE^L||||||F
OBX|43|CE|at0138^Lateral^99A-F4ADB3A91A896333|1.3.10.1|64100000^No^SCT||||||F
OBX|44|CE|at0139^Postero-lateral^99A-F4ADB3A91A896333|1.3.10.2|64100000^No^SCT||||||F
OBX|45|CE|at0140^Posterior^99A-F4ADB3A91A896333|1.3.10.3|64100000^No^SCT||||||F
OBX|46|CE|at0141^Anterior^99A-F4ADB3A91A896333|1.3.10.4|64100000^No^SCT||||||F
OBX|47|CE|at0142^Bladder neck^99A-F4ADB3A91A896333|1.3.10.5|64100000^No^SCT||||||F
OBX|48|CE|at0143^Apical^99A-F4ADB3A91A896333|1.3.10.6|64100000^No^SCT||||||F
OBX|49|CE|at0144^Other^99A-F4ADB3A91A896333|1.3.10.7|64100000^No^SCT||||||F
OBX|50|CE|44670-8^Margin status^LN|1.3.11|55182004^Not involved^SCT||||||F
OBX|51|CE|44626-0^Seminal vesicles^LN|1.3.16|at0160^Not involved^99A-F4ADB3A91A896333||||||F
OBX|52|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3.19|23.02.28965^Lymph node status^RCPA||||||F
OBX|53|NM|44621-1^Number of lymph nodes examined^LN|1.3.19.1|1||||||F
OBX|54|NM|21893-3^Number of positive lymph nodes^LN|1.3.19.2|0||||||F
OBX|55|CE|59544-7^Lymphovascular invasion^LN|1.3.20|at0171^Not identified^99A-F4ADB3A91A896333||||||F
OBX|56|CE|70949-3^^LN^CLUSTER^^EN 13606|1.4|70949-3^Synthesis and overview^LN||||||F
OBX|57|CE|70949-3^^LN^CLUSTER^^EN 13606|1.4.1|21902-2^Pathological staging (AJCC 7th Ed)^LN||||||F
OBX|58|CE|21899-0^Primary tumour (T)^LN|1.4.1.1|at0176^T2  Organ Confined^L||||||F
OBX|59|CE|70949-3^^LN^CLUSTER^^EN 13606|1.4.2|67203-0^Year and edition of staging system^LN||||||F
OBX|60|ST|at0106^Year^99A-F4ADB3A91A896333|1.4.2.1|AJCC 2005||||||F
OBX|61|ST|at0107^Edition^99A-F4ADB3A91A896333|1.4.2.2|7th Ed||||||F
OBX|62|FT|34574-4^Diagnostic summary^LN|1.4.3|1. Radical prostatectomy: Prostatic adenocarcinoma \.br\2.
Left pelvic lymph node: Fibradipose tissue only \.br\3. Right pelvic lymph node: No evidence of malignancy
\.br\4. Periprostatic tissue: No evidence of malignancy \.br\5. Left apical margin: No evidence of
mailgnancy 6. Left lateral margin: No evidence of malignancy||||||F
OBX|63|ED|PDF^Display format in PDF^AUSPDI||ECLIPSE&ECLIPSE:3.1.8 [win32-
i386]&L^application^pdf^Base64^JVB...UlRU9GDQo=||||||F
```

Example: Structured reporting of colorectal cancer

Note:

1) The Base64 PDF content in the example below has been truncated intentionally. Please refer to the following to link for a full example in a file. Download example here[114].

2) A number of test code identifiers are "LN-RCPA" codes. These codes are intended to be LOINC codes that have been submitted to Regenstrief, but have not yet been processed.

3) This example message may not reflect the terminology/information model of the current version of the structured cancer reporting protocol. In the example the archetype version reflects the protocol version and is indicated in OBX|1| field 5.

Structure Colorectal Cancer report

```
MSH|^~\&|MOADLEDIT^MOADLEDIT:3.1.2 (Build 6381) [win32-i386]^L|
Unassigned^8D9FE669-4710-455D-8B97-811508B616E7^GUID|||20161102150514+1100||ORU^R01^ORU_R01|
XX11021505120-7859|P|2.4^AUS&Australia&ISO3166_1^HL7AU-OO-201701&&L|||AL|AL|AUS||en^English^ISO639
PID|1||8003608833357361^^^AUSHIC^NI~7654321^^^RMH^MR||CITIZEN^GEORGE||19640701|M|||C/o Paradise Close^^NAR
NAR GOON^VIC^3812^AUS
```

114 https://confluence.hl7australia.com/download/attachments/31590259/20180807%20-%20Colorectal%20example.hl7?api=v2&modificationDate=1625630098794&version=1

```
PV1|1|O|||||||419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN
ORC|RE||3BE7CECB-AD59-4C46-B711-5F6E137C2890^Unassigned^8D9FE669-4710-455D-8B97-811508B616E7^GUID||
CM|||||||419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN
OBR|1||3BE7CECB-AD59-4C46-B711-5F6E137C2890^Unassigned^8D9FE669-4710-455D-8B97-811508B616E7^GUID|84907
-5^Colorectal Cancer Structured Pathology Report^LN|||20161102+1100|||||||||
419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN||||LN=3BE7CECB-AD59-4C46-B711-5F6E137C2890||
201611021450+1100||SP|F||^^^20161102+1100|
419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN~921198YF^SMITH^MICHAEL^^^DR^^^AUSHICPR^L^^^UPIN
OBX|1|RP|60572-5^^LN^ENTRY^^EN 13606|1|CEN.RCPA-ColorectalCancer.v3^Colorectal Cancer Structured Pathology
Report&99A-4DD10FEE7661CBF6&L^TEXT^Octet-stream||||||F
OBX|2|CE|70949-3^^LN^CLUSTER^^EN 13606|1.1|70949-3^Clinical details^LN||||||F
OBX|3|ST|55752-0^Clinical information^LN|1.1.1|R Colon cancer||||||F
OBX|4|ST|57723-9^Pathology Accession number^LN|1.1.2|89671-16MP||||||F
OBX|5|ST|22027-7^Operating surgeon name^LN|1.1.3|Dr Dayoub||||||F
OBX|6|CE|33725-3^Tumour location^LN|1.1.7|32713005^Caecum^SCT||||||F
OBX|7|CE|29306-8^Type of operation^LN|1.1.10|235326000^Right hemicolectomy^SCT||||||F
OBX|8|ST|81169-5^Surgeon's opinion on the existence of local residual cancer postsurgery^LN|1.1.13|Not
stated||||||F
OBX|9|ST|LN-RCPA-00064^Involvement of adjacent organs^L|1.1.14|Not stated||||||F
OBX|10|ST|LN-RCPA-00065^Regional (local) recurrence or distant metastasis^L|1.1.16|Not stated||||||F
OBX|11|CE|70949-3^^LN^CLUSTER^^EN 13606|1.2|70949-3^Macroscopic findings^LN||||||F
OBX|12|NM|LN-RCPA-00066^Specimen length^L|1.2.1|113|mm^^ISO+|||||F
OBX|13|CE|33725-3^Tumour site^LN|1.2.2|32713005^Caecum^SCT||||||F
OBX|14|NM|21889-1^Maximum tumour diameter^LN|1.2.3|43|mm^^ISO+|||||F
OBX|15|NM|81175-2^Distance of tumour to the nearer proximal or distal 'cut end'^LN|1.2.4|35|mm^^ISO+|||||F
OBX|16|NM|LN-RCPA-00067^Distance to nonperitonealised circumferential margin^L|1.2.5|35|mm^^ISO+|||||F
OBX|17|CE|LN-RCPA-00068^Tumour perforation^L|1.2.6|2667000^Absent^SCT||||||F
OBX|18|CE|LN-RCPA-00069^Relationship to anterior peritoneal reflection^L|1.2.7|at0092^Entirely
above^99A-4DD10FEE7661CBF6||||||F
OBX|19|CE|66112-4^Lymph nodes^LN|1.2.10|at0224^Received^99A-4DD10FEE7661CBF6||||||F
OBX|20|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3|70949-3^Microscopic findings^LN||||||F
OBX|21|CE|LN-RCPA-00071^Tumour type^L|1.3.1|35917007^Adenocarcinoma, NOS^SCT||||||F
OBX|22|CE|33732-9^Histological grade^LN|1.3.2|399415002^Low grade - well and moderately
differentiated^SCT||||||F
OBX|23|CE|LN-RCPA-00072^Maximum degree of local invasion into or through the bowel wall^L|1.3.3|
395707006^pT3-Tumour invades through muscularis propria into pericolorectal tissues^SCT||||||F
OBX|24|CE|LN-RCPA-00073^Involvement of the proximal/distal resection ('cut end') margins^L|1.3.4|at0143^Not
involved^99A-4DD10FEE7661CBF6||||||F
OBX|25|CE|LN-RCPA-00075^Status of nonperitonealised circumferential margin (rectal tumours)^L|1.3.8|
at0241^Not involved^99A-4DD10FEE7661CBF6||||||F
OBX|26|NM|LN-RCPA-00076^Microscopic clearance^L|1.3.9|35|mm^^ISO+|||||F
OBX|27|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3.11.1|70949-3^Lymph node site/s^LN||||||F
OBX|28|ST|21893-3^Number of positive^LN|1.3.11.1.2|0||||||F
OBX|29|ST|21894-1^Total number of lymph nodes^LN|1.3.11.1.3|13||||||F
OBX|30|CE|LN-RCPA-00077^Isolated extra-mural tumour deposits^L|1.3.12|2667000^Absent^SCT||||||F
OBX|31|CE|LN-RCPA-00078^Apical node involvement^L|1.3.13|2667000^Absent^SCT||||||F
OBX|32|CE|70949-3^^LN^CLUSTER^^EN 13606|1.3.14|70949-3^Venous and small vessel invasion^LN||||||F
OBX|33|CE|LN-RCPA-00079^Intramural vein invasion^L|1.3.14.2|at0146^Not
identified^99A-4DD10FEE7661CBF6||||||F
OBX|34|CE|LN-RCPA-00080^Extramural vein invasion^L|1.3.14.3|at0149^Not
identified^99A-4DD10FEE7661CBF6||||||F
OBX|35|CE|33739-4^Small vessel invasion^LN|1.3.14.4|372265000^Present^SCT||||||F
OBX|36|CE|33741-0^Perineural invasion^LN|1.3.15|at0156^Not identified^99A-4DD10FEE7661CBF6||||||F
OBX|37|CE|LN-RCPA-00081^Histologically confirmed distant metastases^L|1.3.16|2667000^Absent^SCT||||||F
OBX|38|CE|81317-0^Relevant coexistant pathological abnormalities^LN|1.3.18|260386005^None noted^SCT||||||F
OBX|39|CE|70949-3^^LN^CLUSTER^^EN 13606|1.4|70949-3^Ancillary test findings^LN||||||F
OBX|40|CE|70949-3^^LN^CLUSTER^^EN 13606|1.4.1|70949-3^Mismatch repair enzymes^LN||||||F
```

```
OBX|41|CE|50328-4^PMS-2^LN|1.4.1.2|at0195^Normal staining^99A-4DD10FEE7661CBF6||||||F
OBX|42|CE|50324-3^MSH-6^LN|1.4.1.4|at0201^Normal staining^99A-4DD10FEE7661CBF6||||||F
OBX|43|CE|43368-0^Microsatellite instablility (MSI)^LN|1.4.1.6|373121007^Not tested^SCT||||||F
OBX|44|CE|58483-9^BRAF (V600E mutation)^LN|1.4.1.9|at0208^Not tested^99A-4DD10FEE7661CBF6||||||F
OBX|45|CE|21703-4^RAS gene mutation testing^LN|1.4.1.12|373121007^Not tested^SCT||||||F
OBX|46|CE|70949-3^^LN^CLUSTER^^EN 13606|1.5|70949-3^Synthesis and overview^LN||||||F
OBX|47|CE|70949-3^^LN^CLUSTER^^EN 13606|1.5.1|21902-2^Tumour stage (AJCC 2010)^LN||||||F
OBX|48|CE|21899-0^T classification^LN|1.5.1.1|395707006^pT3^SCT||||||F
OBX|49|CE|21900-6^N classification^LN|1.5.1.2|at0292^pN0^L||||||F
OBX|50|CE|LN-RCPA-00084^Residual tumour status^L|1.5.2|at0212^R0^99A-4DD10FEE7661CBF6||||||F
OBX|51|FT|22637-3^Diagnostic summary^LN|1.5.3|Diagnostic summary:\.br\Speciment type: Right
hemicolectomy\.br\Tumour site: Caecal\.br\Tumour type: Adenocarcinoma\.br\Tumour stage: T3 N0
MX\.br\Completeness of excision: Completely excised\.br\Diagnosis:\.br\Right Colon - Moderately
differentiated caecal Adenocarcinoma, T3\.br\Thirteen lymph nodes negative for metastatis (0/13)
\.br\Surgical margins clear||||||F
OBX|52|ED|PDF^Display format in PDF^AUSPDI||ECLIPSE&ECLIPSE:3.1.8 [win32-
i386]&L^application^pdf^Base64^JVBERi0x...||||||F
```

Example: Use of Structured Numeric (SN)

SN Example

```
MSH|...
PID|...
PV1|...
ORC|RE||21-99968782-CRP-0^Unassigned^8D9FE669-4710-455D-8B97-811508B616E7^GUID||CM|||||||
419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN
OBR|1||21-99968782-CRP-0^Unassigned^8D9FE669-4710-455D-8B97-811508B616E7^GUID|CRP^C REACTIVE PROTEIN^L|||
202101220615|||||||202101220737||419786CW^CRUICE^ANTHONY^^^DR^^^AUSHICPR^L^^^UPIN||||||202103221055||CH|F||
^^^202101150000
OBX|1|SN|1988-5^C-Reactive Protein^LN||<^5|mg/L|0-6||||F|||202101221743
OBX|2|FT|8251-1^Generated comment^LN||C-reactive protein (CRP) is a non-specific indicator of tissue
damage.\.br\The level rises rapidly (within 6-10 hours) after tissue injury, peaks at 48-72 hours and
returns to normal within a few days. Common causes of markedly increased CRP include infection
(particularly bacterial), trauma, surgery, myocardial infarction, many malignancies and inflammatory
disorders.\.br\||||||F
```

Appendix 7 Significant changes (Informative)

202101 release

1. Addition of acknowledgement chapter 8.
2. Addition of Addressing messages using Australian Profile for Provider Directory Services Appendix 10.
3. Appendix titles now indicate either Informative or Normative.
4. Addition of Escape sequences in Text Fields chapter 3.

- Table of Contents added for sections missing them that contain sub section headings.
- Table of Contents expanded for several sections to include deeper child section headings.
- Introduction chapter expanded to include Radiology and Referral context.
- Repetition separator not included in maximum field length counts.
- MSH-10 field size increased to 199
- MSH-18 Repeats not allowed.
- MSH-22 to 27 Fields added.
- MSH-27 Security Handling Instructions added.
- MSH-12 Internal Version IDs defined.
- MSH-21 Conformance statements defined.
- PID-1 required in the Australian context.
- PV1-1 required in the Australian context.
- First repeat of PV1-9 in an ORU is use to identify the target provider of each message. Consulting doctors can be specified in the second or following repeats of this field.
- PV2-39 to 47 Fields added.
- Multiple faults in examples corrected
- Additional CE code systems added.
- ED Mime types must be treated case insensitively
- Addition of XCN FHIR qualification in component 16.
- Other than order messages the OBR-3 Filler Order number must be present and qualified with the site identifier.
- OBR-5 and OBR-6 deprecated
- Addition of CNE and CWE datatypes for OBX-2
- For each display format there must be only one 'AUSPDI' OBX segment.
- Highlighting must be achieved by means other than colour for Atomic data to accommodate colour blind readers.
- Addition of Prescriber Identifier Type
- Addition of Vendor Directory Identifier Type
- UPIN must be used for Australian Medicare Provider numbers.
- RRI segments RF1, PID and PRD have been made optional for backward compatibility due to security considerations for personally identifying information.
- RF1-6 and RF1-11 increased to 250 characters
- RF1-7 Effective Date required.
- When a corrected referral snapshot is sent, all information from the previous snapshot identified by the same RF1-6 Originating referral identifier (EI) must be replaced with the current snapshot. e.g. Allergies, Medication, Results, etc.
- PRD-2 and PRD-7 values must be populated in PRD segments including the PRD-1 role of IR "Intended Recipient"
- Correcting referrals sent in error is now possible.
- OBR-16 is not necessarily the sender or recipient.
- Conformance statement rewording
- Conformance statement numbering fixed where incorrect.
- Conformance - Z segments must not be used in messages.
- Conformance - Receivers must present all messages for triage when the intended recipient is either unrecognised or not supplied.
- Conformance - SMD use of HD datatype clarifications
- Conformance - EI datatype must be valued and for each document/report must be unique within the sender facility namespace (HD).

- Conformance - \ originally incorrectly escaped as \S\ and should be \E\
- Conformance - Receivers must not ignore segments that are present but not expected.
- Conformance - OBX-3 must be valued according to the APUTS standard where a code is available.
- Conformance - A PRD segment where PRD-1 contains IR must have at least one PRD-7 repeat.
- Multiple corrections to example messages.
- OBR-20 Filler Field 1 (ST), made instruction in allowable code table consistent with RC=Y example.

Example: Use of Structured Numeric (SN) datatype[115] added

Significant changes in the following sections:

7.1.2.1 Addressing
The provider or facility identifier (in PRD-7) for the PRD marked with IR meaning "Intended Recipient" (in PRD-1) is used to address each instance of the message to an endpoint. Appendix 10 defines field mapping for addressing individual instances of a REF message to a provider or healthcare facility when using the Australian Profile for Provider Directory Services.

HL7au:00045.7 (r2)
If not, the sending SMD agent must produce an error acknowledgement and return it to the sending application. When using Australian Profile for Provider Directory Services, the sending SMD agent must ensure that it has registered endpoints containing au-receivingfacility that match the outbound message's MSH-4 and au-receivingapplication match MSH-3.

Appendix 8: Substantial changes.

201808 release

1. Addition of Patient referral chapter and associated appendixes, HL7v2 VMR.
2. Removal of first ORC segment (prior to the OBR and OBX before PV1) from REF_I12 message structure. The reason, is alignment with the international standard message structure. Note this may break previous messages which were conformant with AS4700.6 because that segment was mandatory in that standard and we were advised that this it broke the HL7 rules for local extensions. Whether or not it would break parsing of previous messages would depend upon parser behaviour.
3. Updated METeOR code in chapter 2.

201701 release

1. Removal of Site Sequence Number clauses as it is expected users will use ACK's.
2. Updated METeOR codes where required.
3. Updated references to AS 4846-2014 rather than the superseded AS 4846-2006 and AS 5017-2006.
4. Inclusion of Patient Administrations segments for pathology ie MSH, PV1, PID
5. Re-structuring of conformance points into a table, separating out each point into an individual item.
6. Added PDF Conformance PDF/A-1b which off the shelf PDF validators can assess.
7. Deprecation of PIT
8. Development of more detailed conformance points in an appendix

115 https://confluence.hl7australia.com/pages/viewpage.action?pageId=31589982

Appendix 8 Simplified REF profile (Normative)

A8.1 Purpose

The purpose of this simplified REF profile is to enable widespread messaging by compliant implementations through reducing the requirements on implementers by specifying a smaller constrained subset of the patient referral message.

A8.2 Conformance

A8.2.1 Conformance Levels

This profile defines 2 levels of conformance.

A8.2.1.1 Referral Level 1

Level 1 focuses on baseline receiving capability of a single OBR observation group containing a PDF display segment. Receivers must to be able to display this PDF display segment. Senders must send a PDF display segment. There is no requirement on receivers to be able to display other display segment types if present. Atomic data may still be present. Attachments are not supported in Level 1.

A8.2.1.2 Referral Level 2

Level 2 allows for multiple OBR observation groups and guarantees receivers support all display segment types (HTML, PDF, RTF, TXT (FT)). Senders may choose which display segment formats to send but must send at least one. Attachments are supported in this level.

A8.2.1.3 Referral Level 1 & 2 Common requirements

Note that both levels require that atomic data such as allergy/medication/patient history data can be received without error. The display segment(s) of level 1 and 2 are required to represent any atomic data. There is no requirement to process the atomic data for viewing by a user.

A8.2.2 Conformance Statements

Many of the conformance statements that apply to this profile also apply to other uses of the broader standard such as pathology messages such as ORU, so these stated in a common place.

Refer to Appendix 5 Conformance Statements (Normative) (see page 416) for a list of conformance statements that aren't referenced here. The table there indicates relevant points by "Referrals" in the Message Type Applicability column of the table.

In the following sections some of these conformance statements in Appendix 5 will be referenced simply by citing the HL7au: identifier for the conformance point, however, not every required point will be referenced in this section.

A8.3 Sender Conformance

Senders must signal conformance with these profile levels by populating MSH-12 Version ID field with the following components for all messages part of the profile:

Referral Level 2 conformance:

MSH-12 Version ID field content
2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706&&L

Refer to HL7au:000040.4 (see page 446)

Referral Level 1 conformance:

MSH-12 Version ID field content
2.4^AUS&Australia&ISO3166_1^HL7AU-OO-REF-SIMPLIFIED-201706-L1&&L

A8.4 Receiver Conformance

Receivers may indicate conformance to the simplified REF profiles in a directory or communicated in out-of-band site to site agreement.

Identifiers derived from the following can be used

```
HL7AU-OO-REF-SIMPLIFIED-201706
HL7AU-OO-REF-SIMPLIFIED-201706-L1
```

If a directory requires an identifier in the form of a URI then the following must be specified to indicate receiver conformance to this profile.

A8.4.1 Referral Level 1

For REF^I12 messages:

http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-REF-SIMPLIFIED-201706-L1

For RRI^I12 (referral response) messages:

http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-REF-SIMPLIFIED-201706/RRI

A8.4.2 Referral Level 2

For REF^I12 messages:

http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-REF-SIMPLIFIED-201706

For RRI^I12 (referral response) messages:

http://ns.hl7.org.au/hl7v2/profiles/HL7AU-OO-REF-SIMPLIFIED-201706/RRI

NOTE: The above are URI identifiers and may not necessarily resolve. Please see Australian Provider Directory Implementation Guide - Australian Endpoint Payload Types.

A8.5 Simplified REF profile message structure

For the purposes of compliance with this profile, the REF_I12 structure of chapter 7 is replaced with the following message structure.

Constrained REF_I12 message structure

```
MSH                                 Message Header
RF1                                 Referral Information
{PRD}                               Provider Data
PID                                 Patient Identification
[{AL1}]                             Allergy Information
{
        OBR                             Observation Request
        {OBX}                           Observation/Result
}
PV1                                 Patient Visit
[PV2]                               Patient Visit Additional Info
[{
    ORC                             Common Order
```

```
    RXO                         Pharmacy/Treatment Order
    {RXR}                       Pharmacy/Treatment Route
    [{RXC}]                     Pharmacy/Treatment Component Order
    [{OBX}]                     Observation/Result
}]
```

This profile uses the same RRI_I12 message structure as specified in Chapter 7 Patient Referral.

A8.6 Character Set

All receivers must support ASCII character. Refer to HL7au:00048.3.2 (see page 464).

Character set 8859/1 and UNICODE UTF8 are unsupported by this profile.

A8.7 Clinical Information

The referral message must contain one OBR/OBX group which is indicated as clinical information as per section 4.4.1.4.1 OBR-4 codes in referral messages (see page 212) which is the main body of the referral. It must include one or more display segments formats which represent all atomic information. Refer to A8.8 Atomic Information (see page 482). References to attachments must be included in the display segment.

As older referrals may be included, the current referral must appear as the first OBR/OBX group.

The OBR-24 Diagnostic serv sect ID (ID) (Section 4.4.1.24) (see page 225) must be valued. Refer to HL7au:000032.2 (see page 444).

A8.7.1 Senders

Senders must place "PHY" into OBR-24 Diagnostic serv sect ID (ID) (Section 4.4.1.24) (see page 225).

A8.7.2 Receivers

Where multiple inboxes are used in a receiving system, the value of OBR-24 must be used to direct the data to the appropriate inbox. Refer to HL7au:000032.3 (see page 444).

A8.8 Atomic information

A8.8.1 Receiver

Whenever atomic data is present a receiving system can just display the display segment, but must not fail to process a message containing atomic data.

A8.8.2 Sender

Unlike laboratory messages it is allowable for senders to include whatever atomic data is available. The display segment can include data items that are not present as atomic data.

Atomic information for the message will be allergies, medications and observations. If atomic medications are include they must be represented in the RXO segment groups. If the atomic allergy information is included, it must be represented in the AL1 segments. Observations which can be represented as part of the HL7v2 Virtual Medical

Record (HL7v2 VMR) should use that structure to do so. Refer to Appendix 9 HL7v2 Virtual Medical Record (Normative) (see page 490) for instructions on how to use that. Further observations which cannot be represented in the structures already provided may use additional OBX observation segments inside the referral clinical information group but must not share the OBX-4 sub ID root with the HL7v2 VMR (i.e. They must not be "1" or start with "1." as this is reserved for the HL7v2 VMR) (Refer to 7.3.13 OBX (see page 344) and 4 Observation Reporting (see page 201)).

Atomic information should be supplied where available.

All atomic information must be redundant in the sense that it must also be represented within the display segments of the same OBR/OBX group.

Refer to HL7au:000008.2.1 (see page 422)and HL7au:000008.2.2 (see page 423).

A8.9 Display Segments

Display segments are defined in Section 7.5 Display Segments (see page 363) and 4.5 Display Segments (see page 247).

Each OBR/OBX group must have at least one display segment.

For this profile, receivers must allow viewing the display segments for each OBR/OBX group. Refer to HL7au:00103.3 (see page 472).

Refer to the conformance points under HL7au:000008 (see page 420)that apply to referral messages.

Senders must send one or more display formats in the following form HTML, PDF, TXT (HL7 FT). HL7au:000008.3.1 (see page 423)

Senders may send RTF is optional extra display format. HL7au:000008.1 (see page 420), HL7au:000008.3.2 (see page 423)

Receivers must be able to support the display of all display formats HL7au:000008.1.1 (see page 421). (Some may be viewed with an embedded viewer and external viewer, while others may be viewed with just an external viewer e.g. RTF).

A8.10 Supporting Observations or Performed Services.

The referral message may contain zero or more OBR/OBX groups which are other clinical/pathology/radiology reports as supporting information.

A8.10.1 Referral creators/senders

Referral creators must be provided an opportunity to select diagnostic items to include in the referral composition. The sender's system must copy from the selected items the original OBR/OBX segment groups and fields of the message (e.g. ORU) and include those in the REF message. It is important that the fields in these segments are preserved from the original sender, especially OBR-22 Results rpt/status chng (Refer to section 4.4.1.22) (see page 225).

A8.10.2 Referral receivers

Receiving systems must display supporting information to the user along with the main body of the referral as well as file these appropriately into the correct area based on OBR-24 Diagnostic serv sect ID (ID) (Section 4.4.1.24) (see page 225) value.

Where receiving implementations have inbox categories such as "Pathology", "Radiology" and "Clinical"/"Other" in their systems, implementers must refer to HL7 Table 0074 - Diagnostic service section ID (see page 225)and direct data to these appropriate inboxes. Here is an example mapping for such a scenario (informative only).

An example mapping of HL7 Table 0074 - Diagnostic service section ID where a system might have bins for "Pathology" / "Radiology" and "Other" is provided below - This is Informative

Value	Description	Pathology / Radiology / Other
AU	Audiology	Other
BG	Blood Gases	Pathology
BLB	Blood Bank	Pathology
CG	Cytogenetics	Other
CUS	Cardiac Ultrasound	Radiology
CTH	Cardiac Catheterization	Other
CT	CAT Scan	Radiology
CH	Chemistry	Pathology
CP	Cytopathology	Pathology
EC	Electrocardiac (e.g. ECG, EEC, Holter)	Other
EN	Electroneuro	Other
GE †	Genetics	Other
HM	Haematology	Pathology
ICU	Bedside ICU Monitoring	Other
IMM	Immunology	Pathology
LAB	Regional laboratory (departments not distinguishable)	Pathology
MB	Microbiology	Pathology
MCB	Mycobacteriology	Pathology
MYC	Mycology	Pathology
NMR	Nuclear Magnetic Resonance	Radiology
NMS	Nuclear Medicine Scan	Radiology
NRS	Nursing Services Measures	Other
OUS	OB Ultrasound	Radiology

Value	Description	Pathology / Radiology / Other
OT	Occupational Therapy	Other
OTH	Other	Other
OSL	Outside Lab	Pathology
PHR	Pharmacy	Other
PT	Physical Therapy	Other
PHY	Physician (Hx. Dx, admission note, etc)	Other
PF	Pulmonary Function	Other
RAD	Radiology	Radiology
RUS	Radiology Ultrasound	Radiology
RC	Respiratory Care (therapy)	Other
RT	Radiation Therapy	Other
RX	Radiograph	Radiology
SR	Serology	Pathology
SP	Histology and Anatomical Pathology	Pathology
TX	Toxicology	Pathology
VUS	Vascular Ultrasound	Radiology
VR	Virology	Pathology
XRC	Cineradiograph	Other

Refer to HL7au:000032.3 (see page 444).

A8.11 Encapsulated data attachments

Attachments may be attached to any OBR/OBX group and shown appropriately.

Refer to 4.26 Non-Displayable Supporting data (see page 274) and conformance points under HL7au:00101 (see page 469).

A8.12 Addressing

Refer to Appendix 10 Addressing messages using Australian Profile for Provider Directory Services (Normative) (see page 528).

A8.13 Referral Acknowledgement

Conforming receiving systems of patient referrals messages must respond by sending and referral acknowledgement message back to the original sender of the received patient referral. Refer to 7.2.2 Patient Referral Acknowledgement Message structure (RRI_I12) (see page 325).

See HL7au:00045.4 (see page 459)

Senders must be capable of receiving and processing an RRI^I12 message. See HL7au:00045.5 (see page 460)

Senders must publish their ability to receive a RRI in the provider directory. See HL7au:00045.6 (see page 460)
Before sending a referral message, Secure Messaging agents must validate that there is a valid referral response RRI entry in the provider directory. See HL7au:00045.7 (see page 460)

Appendix 9 HL7v2 Virtual Medical Record (Normative)

A9.1 Introduction

The HL7v2 Virtual Medical Record (VMR) is a way to implement a structured information atomically in a series of HL7 OBX segments following a template methodology.

It is based upon the HL7 Publication "HL7 Version 2 Implementation Guide: Implementing the Virtual Medical Record for Clinical Decision Support (vMR-CDS), Release 1[116] " (you may need an account with HL7 International to download). Refer to that document for a deeper understanding and discussion of the methodology. This appendix will simply provide a prescription for its implementation in a simple way.

The HL7v2 Virtual Medical Record is also defined by the LOINC as "Virtual Medical Record for Clinical Decision Support panel HL7.VMR-CDS" (74028-2). The panel definition can be viewed at the following URL: https://s.details.loinc.org/LOINC/74028-2.html?sections=Comprehensive

A9.2 Implementing the HL7v2 Virtual Medical Record with OBX segments

A9.2.1 Specifying the HL7v2 VMR is in use.

When using the HL7v2 VMR a header OBX must be present which indicates that a report template is in use. In the header, OBX-3 field must have the value "74028-2^Report template ID^LN", and the template that is in use OBX-5 must, and also specify an OBX-4 sub-ID which must be a dotted decimal value (for simplicity "1" has been specified as the root sub ID). This header OBX must have a OBX-2 Datatype field value of "RP" (See 3.20 RP - Reference Pointer (see page 167)). OBX-5 must be valued as "HL7V2-VMR.v1^HL7V2 VMR&99A-9AAC5A649D18B6F2&L^TX^Octet-stream".

Subsequently all other OBX segments present that form part of the HL7.VMR must have dotted sub id based on this OBX-4 sub-ID this header OBX.

Therefore as an example, the first OBX is static and must be as follows:

116 http://www.hl7.org/dstucomments/showdetail.cfm?dstuid=108


```
OBX|1|RP|74028-2^Report template ID^LN|1|HL7V2-VMR.v1^HL7V2 VMR&99A-9AAC5A649D18B6F2&L^TX^Octet-
stream|||||F
```

A9.2.2 Implementing each element of the HL7v2 VMR

The HL7v2 VMR OBX implementation table (see page 492) below defines the elements of the VMR and provides values that must be used in various OBX fields as indicated by the column headings.

Each VMR element must be implemented as an OBX, the values of which will be discussed following the table.

When the row in the table has a VMR Datatype column of ENTRY, SECTION, STRUCTURAL, COLLECTION then the prescribed values in the table must be used.

Technically, OBX for VMR Data SECTIOHTTPAccessControlAllowOriginManagerN, STRUCTURAL and COLLECTION are optional as the structure is implied by the dotted decimal structured OBX-4 Observation sub-ID. However, including these OBX segments can be useful to viewers of the atomic data but non-essential for computed interpretation of the actual content.

A9.2.2.1 HL7v2 VMR OBX implementation table

Refer to the legend table that follows after this table which explains the colours used. The colours are redundant and are indicative of certain values in the VMR Datatype column.

A9.T.1 HL7v2 VMR OBX implementation table

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Report template ID	RP		1	HL7V2-VMR.v1^HL7V2 VMR&99A-9AAC5A649D18B6F2&L^TX^Octet-stream		1	ENTRY
History of Presenting Complaint	CWE	73983-9[117]^^LN	1.1	34046-3^History of Presenting Complaint^LN		0..1	SECTION
Chief Complaint	CWE	10154-3[118]^Chief Complaint^LN	1.1.1	*Constraint (Child of Snomed-CT term 404684003 | Clinical finding (finding)[119])*		0..1	CODEDVALUE

117 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
118 http://r.details.loinc.org/LOINC/10154-3.html?sections=Comprehensive
119 http://browser.ihtsdotools.org/?perspective=full&conceptId1=404684003&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=32570271000036106

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Date of Onset	TS	11368-8[120]^Date of Onset^LN	1.1.2			0..1	DATETIME
Notes	FT	8251-1[121]^Notes^LN	1.1.3			0..1	STRING
History of Past Illness	CWE	73983-9[122]^^LN	1.2	11348-0[123]^History of Past Illness^LN^417662000^History of Past Illness^SCT		0..1	SECTION
Past Illness †	-		*1.2.1.RepeatOf[CLUSTER -- Past Illness]*			*0..**	*STRUCTURAL*
Past Illness	CWE	11349-8[124]^Past Illness^LN	1.2.1.RepeatOf[CLUSTER -- Past Illness].1	*Constraint (Child of Snomed-CT term* 404684003 | Clinical finding (finding)[125] *)*		0..1	CODEDVALUE

120 http://r.details.loinc.org/LOINC/11368-8.html?sections=Comprehensive
121 http://r.details.loinc.org/LOINC/8251-1.html?sections=Comprehensive
122 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
123 https://details.loinc.org/LOINC/11348-0.html
124 http://r.details.loinc.org/LOINC/11349-8.html?sections=Comprehensive
125 http://browser.ihtsdotools.org/?perspective=full&conceptId1=404684003&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=32570271000036106

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Temporal Context	CWE	408731000[126]^Temporal Context^SCT	1.2.1.RepeatOf[CLUSTER -- Past Illness].2	Value Set (15240007^Current^SCT 410511007^Current or past^SCT 410587003^Past - specified^SCT 410588008^Past - unspecified^SCT 410589000^All times past^SCT 6493001^Recent^SCT) If the temporal context is unspecified, then 410511007^Current or past^SCT is the assumed value.		0..1	CODEDVALUE
Illness Dates	DR	11368-8[127]^Illness Dates^LN	1.2.1.RepeatOf[CLUSTER -- Past Illness].3			0..1	DATERANGE

126 http://browser.ihtsdotools.org/?perspective=full&conceptId1=408731000&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=32570271000036106
127 http://r.details.loinc.org/LOINC/11368-8.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Notes on Illness	FT	8251-1[128]^Notes on Illness^LN	1.2.1.RepeatOf[CLUSTER -- Past Illness].4			0..1	STRING
Procedures	CWE	73983-9[129]^^LN	1.3	47519-4^^LN^416940007		0..1	SECTION
Procedure †	-	71388002[130]^Procedure^SCT	*1.3.1.RepeatOf[CLUSTER -- Procedure]*			*0..**	*STRUCTURAL*
Procedure Performed	CWE	29300-1[131]^Procedure Performed^LN	1.3.1.RepeatOf[CLUSTER -- Procedure].1	*Constraint (Child of Snomed-CT term* 71388002 | Procedure (procedure) |[132]*)*	Y	0..1	CODEDVALUE
Notes on Procedure	FT	8251-1[133]^Notes on Procedure^LN	1.3.1.RepeatOf[CLUSTER -- Procedure].2			0..1	STRING
Family History	CWE	73983-9[134]^^LN	1.4	10157-6^Family History^LN		0..1	SECTION

128 http://r.details.loinc.org/LOINC/8251-1.html?sections=Comprehensive
129 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
130 http://browser.ihtsdotools.org/?perspective=full&conceptId1=71388002&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=32570271000036106
131 http://r.details.loinc.org/LOINC/29300-1.html?sections=Comprehensive
132 http://browser.ihtsdotools.org/?perspective=full&conceptId1=71388002&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=32570271000036106
133 http://r.details.loinc.org/LOINC/8251-1.html?sections=Comprehensive
134 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Patients Family Tree ID	ST	74027-4[135]^Patients Family Tree ID^LN	1.4.1			0..1	STRING
Natural Father ID	ST	74026-6[136]^Natural Father ID^LN	1.4.2			0..1	STRING
Natural Mother ID	ST	74025-8[137]^Natural Mother ID^LN	1.4.3			0..1	STRING
Relatives	CWE	73983-9[138]^^LN	1.4.4	224086007^Relatives^SCT		0..1	SECTION
Relative †	-		*1.4.4.1.RepeatOf[CLUSTER -- Relative]*			*0..**	*STRUCTURAL*
Relative Name	ST	54138-3[139]^Relative Name^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].1			0..1	STRING

135 http://r.details.loinc.org/LOINC/74027-4.html?sections=Comprehensive
136 http://r.details.loinc.org/LOINC/74026-6.html?sections=Comprehensive
137 http://r.details.loinc.org/LOINC/74025-8.html?sections=Comprehensive
138 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
139 http://r.details.loinc.org/LOINC/54138-3.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Relationship	CWE	44767-2[140]^Relationship^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].2	*Constraint (HL7 v3 FamilyMember Value set = Child of Role Code _PersonalRelationshipRoleType FAMMEMB)* *Use "ROLECODE" for Name of Coding System component of CWE* See Table HL7 v3 FamilyMember Value set (see page 517) below		0..1	CODEDVALUE
Relative ID	ST	74024-1[141]^Relative ID^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].3			0..1	STRING
Natural Father ID	ST	74026-6[142]^Natural Father ID^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].4			0..1	STRING
Natural Mother ID	ST	74025-8[143]^Natural Mother ID^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].5			0..1	STRING

140 http://r.details.loinc.org/LOINC/44767-2.html?sections=Comprehensive
141 http://r.details.loinc.org/LOINC/74024-1.html?sections=Comprehensive
142 http://r.details.loinc.org/LOINC/74026-6.html?sections=Comprehensive
143 http://r.details.loinc.org/LOINC/74025-8.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
deceasedEstimated Age	ST	39016-1[144]^Deceased Estimated Age^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].6			0..1	REAL
LivingEstimatedAge	ST	21612-7[145]^Living Estimated Age^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].7			0..1	REAL
Clinical Genomic Choice	CWE	73983-9[146]^^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice]			0..*	COLLECTION
Clinical Observation	CWE	74023-3[147]^Clinical Observation^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice].1			1..1	CODEDVALUE

144 http://r.details.loinc.org/LOINC/39016-1.html?sections=Comprehensive
145 https://r.details.loinc.org/LOINC/21612-7.html?sections=Comprehensive
146 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
147 http://r.details.loinc.org/LOINC/74023-3.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Negation Indicator	CWE	74022-5[148]^Negation Indicator^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice].2	Value Set (31874001^True^SCT 64100000^False^SCT 64957009^Uncertain^SCT)		0..1	BOOLEAN
Cause of Death	CWE	74044-9[149]^Cause of Death^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice].3	Value Set (31874001^True^SCT 64100000^False^SCT 64957009^Uncertain^SCT)		0..1	BOOLEAN
DataEstimatedAge	ST	21611-9[150]^Data Estimated Age^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice].4			0..1	REAL

148 http://r.details.loinc.org/LOINC/74022-5.html?sections=Comprehensive
149 http://r.details.loinc.org/LOINC/74044-9.html?sections=Comprehensive
150 http://r.details.loinc.org/LOINC/21611-9.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Genetic Loci	ST	48018-6[151]^Genetic Loci^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice]. 5.RepeatOf[ELEMENT -- Genetic Loci]			0..*	STRING
Genetic Risks	CWE	73983-9[152]^^LN	1.4.5	106221001^Genetic Risks^SCT		0..1	SECTION
Pedigree Analysis Results †	-	47708004^Pedigree Analysis Results^SCT	*1.4.5.1.RepeatOf[CLUSTER -- Pedigree Analysis Results]*			*0..**	*STRUCTURAL*
Genetic Disease Assessed	CWE	51967-8[153]^Genetic Disease Assessed^LN	1.4.5.1.RepeatOf[CLUSTER -- Pedigree Analysis Results].1			0..1	CODEDVALUE
Input Parameters	CWE	73983-9[154]^^LN	1.4.5.1.RepeatOf[CLUSTER -- Pedigree Analysis Results].2	73983-9^Input Parameters^LN		0..1	SECTION
Genetic Algorithm Used	CWE	74021-7[155]^Genetic Algorithm Used^LN	1.4.5.1.RepeatOf[CLUSTER -- Pedigree Analysis Results].2.1			0..1	CODEDVALUE

151 http://r.details.loinc.org/LOINC/48018-6.html?sections=Comprehensive
152 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
153 http://r.details.loinc.org/LOINC/51967-8.html?sections=Comprehensive
154 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
155 http://r.details.loinc.org/LOINC/74021-7.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Sensitivity	NM	74020-9[156]^Sensitivity^LN	1.4.5.1.RepeatOf[CLUSTER -- Pedigree Analysis Results].2.2			0..1	PHYSICALQUANTITY
Probability of Disease	ST	74019-1[157]^Probability of Disease^LN	1.4.5.1.RepeatOf[CLUSTER -- Pedigree Analysis Results]. 3.RepeatOf[ELEMENT -- Probability of Disease]			0..*	REAL
Pregnancy History	CWE	73983-9[158]^^LN	1.5	11449-6^Pregnancy History^LN		0..1	SECTION
Gravida	NM	11996-6[159]^Gravida^LN	1.5.1			0..1	INTEGER
Parity	NM	11977-6[160]^Parity^LN	1.5.2			0..1	INTEGER
Miscarriages	NM	11614-5[161]^Miscarriages^LN	1.5.3			0..1	INTEGER
Terminations	NM	11613-7[162]^Terminations^LN	1.5.4			0..1	INTEGER

156 http://r.details.loinc.org/LOINC/74020-9.html?sections=Comprehensive
157 http://r.details.loinc.org/LOINC/74019-1.html?sections=Comprehensive
158 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
159 http://r.details.loinc.org/LOINC/11996-6.html?sections=Comprehensive
160 http://r.details.loinc.org/LOINC/11977-6.html?sections=Comprehensive
161 http://r.details.loinc.org/LOINC/11614-5.html?sections=Comprehensive
162 http://r.details.loinc.org/LOINC/11613-7.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Social History	CWE	73983-9[163]^^LN	1.6	29762-2^Social History^LN		0..1	SECTION
Social Situation	FT	10166-7[164]^Social Situation^LN	1.6.1			0..1	STRING
Substance Use	CWE	73983-9[165]^^LN	1.7	18663-5^Substance Use^LN		0..1	SECTION
Smoking History	CWE	73983-9[166]^^LN	1.7.1	11367-0^Smoking History^LN		0..1	SECTION
Tobacco use and exposure	CWE	63638-1[167]^Tobacco use and exposure^LN	1.7.1.1	Value Set (8517006^Ex-smoker^SCT 43381005^Passive smoker^SCT 77176002^Smoker^SCT 8392000^Non-smoker^SCT)		0..1	CODEDVALUE

163 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
164 http://r.details.loinc.org/LOINC/10166-7.html?sections=Comprehensive
165 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
166 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
167 http://r.details.loinc.org/LOINC/63638-1.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Tobacco smoking consumption	NM	63858-5[168]^Tobacco smoking consumption^LN	1.7.1.2			0..1	PHYSICALQUANTITY
Lifetime Intake	NM	74011-8[169]^Lifetime Intake^LN	1.7.1.3			0..1	PHYSICALQUANTITY
Date Ceased	DT	74010-0[170]^Date Ceased^LN	1.7.1.4			0..1	DATETIME
Alcohol Intake	CWE	73983-9[171]^^LN	1.7.2	11330-8^Alcohol Intake^LN		0..1	SECTION
Alcohol Intake	CWE	11331-6[172]^Alcohol Intake^LN	1.7.2.1	Value Set (82581004^Ex-drinker^SCT 105542008^Non - drinker^SCT 219006^Current drinker^SCT)		0..1	CODEDVALUE

168 http://r.details.loinc.org/LOINC/63858-5.html?sections=Comprehensive
169 http://r.details.loinc.org/LOINC/74011-8.html?sections=Comprehensive
170 http://r.details.loinc.org/LOINC/74010-0.html?sections=Comprehensive
171 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
172 http://r.details.loinc.org/LOINC/11331-6.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Last Drank Alcohol	DT	74014-2[173]^Last Drank Alcohol^LN	1.7.2.2			0..1	DATETIME
30 day quantity and frequency	CWE	73983-9[174]^^LN	1.7.2.3	030301^30 day quantity and frequency^PHENX		0..1	SECTION
Number of days alcohol consumed	NM	63597-9[175]^Number of days alcohol consumed^LN	1.7.2.3.1			0..1	INTEGER
Standard drinks per day on a drinking day in last 30 days	NM	63598-7[176]^Standard drinks per day on a drinking day in last 30 days^LN	1.7.2.3.2			0..1	INTEGER
Average Daily Alcohol Intake	NM	74013-4[177]^Average Daily Alcohol Intake^LN	1.7.2.4			0..1	PHYSICALQUANTITY
Maximum Daily Standard Drinks	NM	63591-2[178]^Maximum Daily Standard Drinks^LN	1.7.2.5			0..1	PHYSICALQUANTITY

173 http://r.details.loinc.org/LOINC/74014-2.html?sections=Comprehensive
174 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
175 http://r.details.loinc.org/LOINC/63597-9.html?sections=Comprehensive
176 http://r.details.loinc.org/LOINC/63598-7.html?sections=Comprehensive
177 http://r.details.loinc.org/LOINC/74013-4.html?sections=Comprehensive
178 http://r.details.loinc.org/LOINC/63591-2.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Years Alcohol Consumed	NM	74012-6[179]^Years Alcohol Consumed^LN	1.7.2.6			0..1	PHYSICALQUANTITY
Alcohol abuse or dependence (e.g. DSM IV)	CWE	74043-1[180]^Alcohol abuse or dependence (e.g. DSM IV)^LN	1.7.2.7	Value Set (31874001^True^SCT 64100000^False^SCT 64957009^Uncertain^SCT)		0..1	BOOLEAN
Other substance Use	CWE	73983-9[181]^^LN	1.7.3	11342-3^Other substance Use^LN		0..1	SECTION

179 http://r.details.loinc.org/LOINC/74012-6.html?sections=Comprehensive
180 http://r.details.loinc.org/LOINC/74043-1.html?sections=Comprehensive
181 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Drug misuse details	CWE	228366006[182]^Drug misuse details^SCT	1.7.3.1.RepeatOf[ELEMENT -- Drug misuse details]	Value Set (428659002^Amphetamine misuse^SCT 429179002^Antidepressant misuse^SCT 428623008^Barbiturate misuse^SCT 428823006^Cannabis misuse^SCT 429782000^Cocaine misuse^SCT 307052004^Illicit drug use^SCT 228376009^Inhales drugs^SCT 226034001^Injecting drug user^SCT 70545002^Narcotic drug user^SCT 105546006^Occasional drug abuser^SCT 228372006^Poly-drug misuser^SCT 428495004^Solvent misuse^SCT 228381000^Sniffs drugs^SCT 429512006^Methadone misuse^SCT		0..*	CODEDVALUE

182 http://browser.ihtsdotools.org/?perspective=full&conceptId1=228366006&edition=au-edition&release=v20170430&server=https://prod-browser-exten.ihtsdotools.org/api/snomed&langRefset=32570271000036106

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
				)			
Exercise History	CWE	73983-9[183]^^LN	1.8	266930008^Exercise History^SCT		0..1	SECTION
Currently Exercising	CWE	74008-4[184]^Exercise intensity^LN	1.8.1	Value Set (160635005^Exercise grading unknown^SCT 160633003^Enjoys heavy exercise^SCT 160645007^Enjoys intermediate exercise^SCT 228446001^Gets little exercise^SCT 228445002^Gets no exercise^SCT 160631001^Enjoys light exercise^SCT 160632008^Enjoys moderate exercise^SCT 102533007^Excessive exercise^SCT)		0..1	CODEDVALUE

183 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
184 http://r.details.loinc.org/LOINC/74008-4.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Exercise Type	CWE	55410-5^Exercise Type^LN	1.8.2	Value Set (229072005^Aerobic^SCT)		0..1	CODEDVALUE
Time Spent Exercising	NM	74009-2[185]^Time Spent Exercising^LN	1.8.3			0..1	PHYSICALQUANTITY
Vitals	CWE	73983-9[186]^^LN	1.9	8716-3^Vitals^LN		0..1	SECTION
Blood Pressure	CWE	73983-9[187]^^LN	1.9.1.RepeatOf[CLUSTER -- Blood Pressure]	55417-0^Blood Pressure^LN		0..*	COLLECTION
Systolic Pressure	NM	8480-6[188]^Systolic Pressure^LN	1.9.1.RepeatOf[CLUSTER -- Blood Pressure].1		Y	0..1	PHYSICALQUANTITY
Diastolic Pressure	NM	8462-4[189]^Diastolic Pressure^LN	1.9.1.RepeatOf[CLUSTER -- Blood Pressure].2			0..1	PHYSICALQUANTITY

185 http://r.details.loinc.org/LOINC/74009-2.html?sections=Comprehensive
186 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
187 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
188 http://r.details.loinc.org/LOINC/8480-6.html?sections=Comprehensive
189 http://r.details.loinc.org/LOINC/8462-4.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Patient Position	CWE	8361-8[190]^Patient Position^LN	1.9.1.RepeatOf[CLUSTER -- Blood Pressure].3	Value Set (33586001^Sitting^SCT 102538003^Lying^SCT 272580008^Semi-recumbent^SCT 10904000^Standing^SCT)		0..1	CODEDVALUE
Pulse rate	NM	8893-0[191]^Pulse rate^LN	1.9.2.RepeatOf[ELEMENT -- Pulse rate]		Y	0..*	PHYSICALQUANTITY
Weight	NM	29463-7[192]^Weight^LN	1.9.3.RepeatOf[ELEMENT -- Weight]		Y	0..*	PHYSICALQUANTITY
BMI	NM	39156-5[193]^BMI^LN	1.9.4.RepeatOf[ELEMENT -- BMI]		Y	0..*	PHYSICALQUANTITY
Oxygen Saturation	NM	59408-5[194]^Oxygen Saturation^LN	1.9.5.RepeatOf[ELEMENT -- Oxygen Saturation]		Y	0..*	PHYSICALQUANTITY

190 http://r.details.loinc.org/LOINC/8361-8.html?sections=Comprehensive
191 http://r.details.loinc.org/LOINC/8893-0.html?sections=Comprehensive
192 http://r.details.loinc.org/LOINC/29463-7.html?sections=Comprehensive
193 http://r.details.loinc.org/LOINC/39156-5.html?sections=Comprehensive
194 http://r.details.loinc.org/LOINC/59408-5.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Height	NM	8302-2[195]^Height^LN	1.9.6.RepeatOf[ELEMENT -- Height]		Y	0..*	PHYSICALQUANTITY
Temperature	NM	8310-5[196]^Temperature^LN	1.9.7.RepeatOf[ELEMENT -- Temperature]		Y	0..*	PHYSICALQUANTITY
Respiratory rate	NM	9279-1[197]^Respiratory rate^LN	1.9.8.RepeatOf[ELEMENT -- Respiratory rate]			0..*	PHYSICALQUANTITY
Alerts	CWE	73983-9[198]^^LN	1.10	44944-7[199]^Alerts^LN		0..1	SECTION
Alert	-		*1.10.1.RepeatOf[CLUSTER -- Alert]*			*0..**	*STRUCTURAL*

195 http://r.details.loinc.org/LOINC/8302-2.html?sections=Comprehensive
196 http://r.details.loinc.org/LOINC/8310-5.html?sections=Comprehensive
197 http://r.details.loinc.org/LOINC/9279-1.html?sections=Comprehensive
198 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
199 http://r.details.loinc.org/LOINC/44944-7.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Alert Type	CWE	74018-3[200]^Alert Type^LN	1.10.1.RepeatOf[CLUSTER -- Alert].1	Value Set (129697009^Psychosocial^SCT 307824009^Administrative^SCT 281694009^Clinical^SCT 102487004^Environmental^SCT 78648007^Infection risk^SCT 405145004^Safety and security^SCT 363871006^Special Mental Health^SCT 315638005^Special needs and/or preferences^SCT)		0..1	CODEDVALUE

200 http://r.details.loinc.org/LOINC/74018-3.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Active	CWE	74017-5[201]^Active^LN	1.10.1.RepeatOf[CLUSTER -- Alert].2	Value Set (31874001^True^SCT 64100000^False^SCT 64957009^Uncertain^SCT)		0..1	BOOLEAN
Specific Alert	CWE	44944-7[202]^Specific Alert^LN	1.10.1.RepeatOf[CLUSTER -- Alert].3	Suggested Value Set (40739000^Has difficulty swallowing^SCT 224331001^Known to police^SCT 224347004^Has enduring power of attorney^SCT 310301000^Has advance health directive^SCT)		0..1	CODEDVALUE

201 http://r.details.loinc.org/LOINC/74017-5.html?sections=Comprehensive
202 https://r.details.loinc.org/LOINC/44944-7.html?sections=Comprehensive

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	Suggested OBX-5 Observation value or Value Set or Constraint	OBX-14 Date/ time of the observation is valued (Y=Yes, N=No)	OCCURENCES	VMR DATATYPE
Reported by	CWE	48766-0[203]^Reported by^LN	1.10.1.RepeatOf[CLUSTER -- Alert].4	Value Set (116154003^Subject of care^SCT 229774002^Carer^SCT 223366009^Health worker^SCT 307982007^Social services provider^SCT 14406004^Police^SCT 303071001^Family member^SCT 113163005^Friend^SCT)		0..1	CODEDVALUE
Recorded date	DT	74015-9[204]^Recorded date^LN	1.10.1.RepeatOf[CLUSTER -- Alert].5			0..1	DATETIME

Legend:

Item Type	Row Colour
Element	White

203 https://r.details.loinc.org/LOINC/48766-0.html?sections=Comprehensive
204 https://r.details.loinc.org/LOINC/74015-9.html?sections=Comprehensive

Item Type	Row Colour
Section	Blue
Structural Node	Red
Collection Node	Yellow

A9.2.2.2 OBX-2 DataType (ID)

Each OBX must have it's OBX-2 value as specified exactly as per the HL7v2 VMR OBX implementation table (see page 492).

A9.2.2.3 OBX-3 Observation Identifier (CE)

The OBX-3 values used by the HL7v2 VMR are defined by the LOINC Virtual Medical Record for Clinical Decision Support panel HL7.VMR-CDS (74028-2). The panel definition can be viewed at the following URL: https://s.details.loinc.org/LOINC/74028-2.html?sections=Comprehensive

A9.2.3.4 OBX-4 Observation sub-ID (ST)

In the table Appendix 9 HL7v2 Virtual Medical Record (Normative) (see page 492) OBX-4 subIDs are dotted decimals that start with "1" which is the root OBX-4 subID for all elements of the HL7v2 Virtual Medical Record. The root value "1" has been specified in the above table to aid in simplicity. Theoretically other subID root values could be used instead of "1", but this value must be practical in most cases.

Observations which are not specified by the HL7v2 VMR must not have a OBX-4 subID sharing the same root.

Rows marked VMR DATATYPE column as STRUCTURAL (red rows) must not be written to OBX segments and are present in the table are purely virtual and are to assist with understanding the hierarchy. They must be allocated a dotted subID however, on which all child elements must be prefixed with this subID.

A9.2.3.4.1 Example of use of Past Illness VMR elements

By example consider the history of past illness from the above table. Here is the subset for convenience.

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	OCCURENCES	VMR DATATYPE
History of Past Illness	CWE	73983-9[205]^^LN	1.2	0..1	SECTION
Past Illness †	-		*1.2.1.RepeatOf[CLUSTER -- Past Illness]*	*0..**	*STRUCTURAL*
Past Illness	CWE	11349-8[206]^Past Illness^LN	1.2.1.RepeatOf[CLUSTER -- Past Illness].1	0..1	CODEDVALUE

For items in the table with occurrences with an upper bound > 1 (e.g. 0..*) that element will have "RepeatOf[]" specified in the OBX-4 Observation sub-ID. The "RepeatOf[]" must be substituted with the repeat index integer of the element/structural/section group. All child elements for the repeat index must be prefixed with this sub-ID value.

For example, the first instance of a past illness the OBX-4 sub-ID must be 1.2.1.1, for the second 1.2.1.2.

Based on this the Past Illness OBXes for the first illness must have a OBX-4 sub-ID value of 1.2.1.1.1, and for the second illness, the OBX-4 sub-ID value must be 1.2.1.2.1.

205 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
206 http://r.details.loinc.org/LOINC/11349-8.html?sections=Comprehensive

Example of OBX segments with subIDs indicating 2 past illnesses

```
OBX|6|CE|70949-3^^LN|1.2|11348-0^History of Past Illness^LN^417662000^History of Past Illness^SCT||||||F
OBX|7|CE|11349-8^Past Illness^LN|1.2.1.1.1|50711007^Viral hepatitis C^SCT||||||F
OBX|8|CE|408731000^Temporal Context^SCT|1.2.1.1.2|410584005^Current - specified^SCT||||||F
OBX|9|DR|11368-8^Illness Dates^LN|1.2.1.1.3|20090107||||||F
OBX|10|CE|11349-8^Past Illness^LN|1.2.1.2.1|6142004^Influenza^SCT||||||F
OBX|11|CE|408731000^Temporal Context^SCT|1.2.1.2.2|410587003^Past - specified^SCT||||||F
OBX|12|DR|11368-8^Illness Dates^LN|1.2.1.2.3|20170131^20170318||||||F
```

OBXs with OBX-1 Set ID of 7,8,9 are part of the first illness as their OBX-4 subID is prefixed with 1.2.1.1.

OBX with OBX-1 Set ID 10,11,12 are part of the second illness as their OBX-4 subID is prefixed with 1.2.1.2.

A9.2.3.4.2 Use of complex OBX-4 with multiple nested repeating elements

Structures may repeat at multiple levels. A complex example is the Genetic Loci element which may have many 0.* for each of the repeating Clinical Genomic Choice collection (0...*) for each relative. For convenience see the subset of the table here:

Section Heading or Element	OBX-2 DataType	OBX-3 Value	OBX-4 Observation sub-ID	OCCURENCES	VMR DATATYPE
Relatives	CWE	73983-9[207]^^LN	1.4.4	0..1	SECTION
Relative †	-		*1.4.4.1.RepeatOf[CLUSTER -- Relative]*	*0..**	*STRUCTURAL*
...					
Clinical Genomic Choice	CWE	73983-9[208]^^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice]	0..*	COLLECTION
Clinical Observation	CWE	74023-3[209]^Clinical Observation^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice].1	1..1	CODEDVALUE
Genetic Loci	ST	48018-6[210]^Genetic Loci^LN	1.4.4.1.RepeatOf[CLUSTER -- Relative].8.RepeatOf[CLUSTER -- Clinical Genomic Choice].5.RepeatOf[ELEMENT -- Genetic Loci]	0..*	STRING

As an example the OBX-4 sub-ID value for the fourth Genetic Loci for the second relative's third clinical genomic choice would be (note the variable parts of the sub-ID are indicated bold): 1.4.4.1.**2**.8.**3**.5.**4**

207 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
208 http://r.details.loinc.org/LOINC/73983-9.html?sections=Comprehensive
209 http://r.details.loinc.org/LOINC/74023-3.html?sections=Comprehensive
210 http://r.details.loinc.org/LOINC/48018-6.html?sections=Comprehensive

A9.2.3.5 OBX-5 Observation value (*)

OBX-5 is a variable datatype and the datatype used in each instance as specified in OBX-2.
OBX-5 value domains in table Appendix 9 HL7v2 Virtual Medical Record (Normative) (see page 492) are suggested and values only, sending systems must use the values that they have available in their systems. If common standard terminologies are available, then those can be supplied as alternative code components of the CE/CWE/CNE if a standard terminology isn't used aren't the primary coding system. Where no codes is available then only the text component must be populated.

A9.3 Value Domain Tables

Table HL7 v3 FamilyMember Value set

Level	Code	Display	Definition
1	*(_PersonalRelationshipRoleType)* ***Abstract***	(see page 490)	
2	FAMMEMB	family member	A relationship between two people characterizing their "familial" relationship
3	CHILD	child	The player of the role is a child of the scoping entity.
4	CHLDADOPT	adopted child	The player of the role is a child taken into a family through legal means and raised by the scoping person (parent) as his or her own child.
5	DAUADOPT	adopted daughter	The player of the role is a female child taken into a family through legal means and raised by the scoping person (parent) as his or her own child.
5	SONADOPT	adopted son	The player of the role is a male child taken into a family through legal means and raised by the scoping person (parent) as his or her own child.
4	CHLDFOST	foster child	The player of the role is a child receiving parental care and nurture from the scoping person (parent) but not related to him or her through legal or blood ties.
5	DAUFOST	foster daughter	The player of the role is a female child receiving parental care and nurture from the scoping person (parent) but not related to him or her through legal or blood ties.
5	SONFOST	foster son	The player of the role is a male child receiving parental care and nurture from the scoping person (parent) but not related to him or her through legal or blood ties.

Level	Code	Display	Definition
4	DAUC	daughter	Description: The player of the role is a female child (of any type) of scoping entity (parent)
5	DAUADOPT[211]		
5	DAUFOST[212]		
5	DAU	natural daughter	The player of the role is a female offspring of the scoping entity (parent).
5	STPDAU	stepdaughter	The player of the role is a daughter of the scoping person's spouse by a previous union.
4	NCHILD	natural child	The player of the role is an offspring of the scoping entity as determined by birth.
5	DAU[213]		
5	SON	natural son	The player of the role is a male offspring of the scoping entity (parent).
4	SONC	son	Description: The player of the role is a male child (of any type) of scoping entity (parent)
5	SONADOPT[214]		
5	SONFOST[215]		
5	SON[216]		
5	STPSON	stepson	The player of the role is a son of the scoping person's spouse by a previous union.
4	STPCHLD	step child	The player of the role is a child of the scoping person's spouse by a previous union.
5	STPDAU[217]		
5	STPSON[218]		

211 http://hl7.org/fhir/v3/RoleCode/cs.html#DAUADOPT
212 http://hl7.org/fhir/v3/RoleCode/cs.html#DAUFOST
213 http://hl7.org/fhir/v3/RoleCode/cs.html#DAU
214 http://hl7.org/fhir/v3/RoleCode/cs.html#SONADOPT
215 http://hl7.org/fhir/v3/RoleCode/cs.html#SONFOST
216 http://hl7.org/fhir/v3/RoleCode/cs.html#SON
217 http://hl7.org/fhir/v3/RoleCode/cs.html#STPDAU
218 http://hl7.org/fhir/v3/RoleCode/cs.html#STPSON

Level	Code	Display	Definition
3	EXT	extended family member	Description: A family member not having an immediate genetic or legal relationship e.g. Aunt, cousin, great grandparent, grandchild, grandparent, niece, nephew or uncle.
4	AUNT	aunt	The player of the role is a sister of the scoping person's mother or father.
5	MAUNT	maternal aunt	Description: The player of the role is a biological sister of the scoping person's biological mother.
5	PAUNT	paternal aunt	Description: The player of the role is a biological sister of the scoping person's biological father.
4	COUSN	cousin	The player of the role is a relative of the scoping person descended from a common ancestor, such as a grandparent, by two or more steps in a diverging line.
5	MCOUSN	maternal cousin	Description: The player of the role is a biological relative of the scoping person descended from a common ancestor on the player's mother's side, such as a grandparent, by two or more steps in a diverging line.
5	PCOUSN	paternal cousin	Description: The player of the role is a biological relative of the scoping person descended from a common ancestor on the player's father's side, such as a grandparent, by two or more steps in a diverging line.
4	GGRPRN	great grandparent	The player of the role is a parent of the scoping person's grandparent.
5	GGRFTH	great grandfather	The player of the role is the father of the scoping person's grandparent.
6	MGGRFTH	maternal great-grandfather	Description: The player of the role is the biological father of the scoping person's biological mother's parent.
6	PGGRFTH	paternal great-grandfather	Description: The player of the role is the biological father of the scoping person's biological father's parent.
5	GGRMTH	great grandmother	The player of the role is the mother of the scoping person's grandparent.
6	MGGRMTH	maternal great-grandmother	Description: The player of the role is the biological mother of the scoping person's biological mother's parent.

Level	Code	Display	Definition
6	PGGRMTH	paternal great-grandmother	Description: The player of the role is the biological mother of the scoping person's biological father's parent.
5	MGGRPRN	maternal great-grandparent	Description: The player of the role is a biological parent of the scoping person's biological mother's parent.
6	MGGRFTH[219]		
6	MGGRMTH[220]		
5	PGGRPRN	paternal great-grandparent	Description: The player of the role is a biological parent of the scoping person's biological father's parent.
6	PGGRFTH[221]		
6	PGGRMTH[222]		
4	GRNDCHILD	grandchild	The player of the role is a child of the scoping person's son or daughter.
5	GRNDDAU	granddaughter	The player of the role is a daughter of the scoping person's son or daughter.
5	GRNDSON	grandson	The player of the role is a son of the scoping person's son or daughter.
4	GRPRN	grandparent	The player of the role is a parent of the scoping person's mother or father.
5	GRFTH	grandfather	The player of the role is the father of the scoping person's mother or father.
6	MGRFTH	maternal grandfather	Description: The player of the role is the biological father of the scoping person's biological mother.
6	PGRFTH	paternal grandfather	Description: The player of the role is the biological father of the scoping person's biological father.
5	GRMTH	grandmother	The player of the role is the mother of the scoping person's mother or father.
6	MGRMTH	maternal grandmother	Description: The player of the role is the biological mother of the scoping person's biological mother.

219 http://hl7.org/fhir/v3/RoleCode/cs.html#MGGRFTH
220 http://hl7.org/fhir/v3/RoleCode/cs.html#MGGRMTH
221 http://hl7.org/fhir/v3/RoleCode/cs.html#PGGRFTH
222 http://hl7.org/fhir/v3/RoleCode/cs.html#PGGRMTH

Level	Code	Display	Definition
6	PGRMTH	paternal grandmother	Description: The player of the role is the biological mother of the scoping person's biological father.
5	MGRPRN	maternal grandparent	Description: The player of the role is the biological parent of the scoping person's biological mother.
6	MGRFTH[223]		
6	MGRMTH[224]		
5	PGRPRN	paternal grandparent	Description: The player of the role is the biological parent of the scoping person's biological father.
6	PGRFTH[225]		
6	PGRMTH[226]		
4	INLAW	inlaw	A relationship between an individual and a member of their spousal partner's immediate family.
5	CHLDINLAW	child-in-law	The player of the role is the spouse of scoping person's child.
6	DAUINLAW	daughter in-law	The player of the role is the wife of scoping person's son.
6	SONINLAW	son in-law	The player of the role is the husband of scoping person's daughter.
5	PRNINLAW	parent in-law	The player of the role is the parent of scoping person's husband or wife.
6	FTHINLAW	father-in-law	The player of the role is the father of the scoping person's husband or wife.
6	MTHINLAW	mother-in-law	The player of the role is the mother of the scoping person's husband or wife.
5	SIBINLAW	sibling in-law	The player of the role is: (1) a sibling of the scoping person's spouse, or (2) the spouse of the scoping person's sibling, or (3) the spouse of a sibling of the scoping person's spouse.
6	BROINLAW	brother-in-law	The player of the role is: (1) a brother of the scoping person's spouse, or (2) the husband of the scoping person's sister, or (3) the husband of a sister of the scoping person's spouse.

223 http://hl7.org/fhir/v3/RoleCode/cs.html#MGRFTH
224 http://hl7.org/fhir/v3/RoleCode/cs.html#MGRMTH
225 http://hl7.org/fhir/v3/RoleCode/cs.html#PGRFTH
226 http://hl7.org/fhir/v3/RoleCode/cs.html#PGRMTH

Level	Code	Display	Definition
6	SISINLAW	sister-in-law	The player of the role is: (1) a sister of the scoping person's spouse, or (2) the wife of the scoping person's brother, or (3) the wife of a brother of the scoping person's spouse.
4	NIENEPH	niece/ nephew	The player of the role is a child of scoping person's brother or sister or of the brother or sister of the scoping person's spouse.
5	NEPHEW	nephew	The player of the role is a son of the scoping person's brother or sister or of the brother or sister of the scoping person's spouse.
5	NIECE	niece	The player of the role is a daughter of the scoping person's brother or sister or of the brother or sister of the scoping person's spouse.
4	UNCLE	uncle	The player of the role is a brother of the scoping person's mother or father.
5	MUNCLE	maternal uncle	Description: The player of the role is a biological brother of the scoping person's biological mother.
5	PUNCLE	paternal uncle	Description: The player of the role is a biological brother of the scoping person's biological father.
3	PRN	parent	The player of the role is one who begets, gives birth to, or nurtures and raises the scoping entity (child).
4	ADOPTP	adoptive parent	The player of the role (parent) has taken the scoper (child) into their family through legal means and raises them as his or her own child.
5	ADOPTF	adoptive father	The player of the role (father) is a male who has taken the scoper (child) into their family through legal means and raises them as his own child.
5	ADOPTM	adoptive mother	The player of the role (father) is a female who has taken the scoper (child) into their family through legal means and raises them as her own child.
4	FTH	father	The player of the role is a male who begets or raises or nurtures the scoping entity (child).

Level	Code	Display	Definition
5	ADOPTF[227]		
5	FTHFOST	foster father	The player of the role (parent) who is a male state-certified caregiver responsible for the scoper (child) who has been placed in the parent's care. The placement of the child is usually arranged through the government or a social-service agency, and temporary. The state, via a jurisdiction recognized child protection agency, stands as in loco parentis to the child, making all legal decisions while the foster parent is responsible for the day-to-day care of the specified child.
5	NFTH	natural father	The player of the role is a male who begets the scoping entity (child).
6	NFTHF	natural father of fetus	Indicates the biologic male parent of a fetus.
5	STPFTH	stepfather	The player of the role is the husband of scoping person's mother and not the scoping person's natural father.
4	MTH	mother	The player of the role is a female who conceives, gives birth to, or raises and nurtures the scoping entity (child).
5	ADOPTM[228]		
5	GESTM	gestational mother	The player is a female whose womb carries the fetus of the scoper. Generally used when the gestational mother and natural mother are not the same.
5	MTHFOST	foster mother	The player of the role (parent) who is a female state-certified caregiver responsible for the scoper (child) who has been placed in the parent's care. The placement of the child is usually arranged through the government or a social-service agency, and temporary. The state, via a jurisdiction recognized child protection agency, stands as in loco parentis to the child, making all legal decisions while the foster parent is responsible for the day-to-day care of the specified child.
5	NMTH	natural mother	The player of the role is a female who conceives or gives birth to the scoping entity (child).
6	NMTHF	natural mother of fetus	The player is the biologic female parent of the scoping fetus.
5	STPMTH	stepmother	The player of the role is the wife of scoping person's father and not the scoping person's natural mother.

227 http://hl7.org/fhir/v3/RoleCode/cs.html#ADOPTF
228 http://hl7.org/fhir/v3/RoleCode/cs.html#ADOPTM

Level	Code	Display	Definition
4	NPRN	natural parent	
5	NFTH[229]		
5	NMTH[230]		
4	PRNFOST	foster parent	The player of the role (parent) who is a state-certified caregiver responsible for the scoper (child) who has been placed in the parent's care. The placement of the child is usually arranged through the government or a social-service agency, and temporary. The state, via a jurisdiction recognized child protection agency, stands as in loco parentis to the child, making all legal decisions while the foster parent is responsible for the day-to-day care of the specified child.
5	FTHFOST[231]		
5	MTHFOST[232]		
4	STPPRN	step parent	The player of the role is the spouse of the scoping person's parent and not the scoping person's natural parent.
5	STPFTH[233]		
5	STPMTH[234]		
3	SIB	sibling	The player of the role shares one or both parents in common with the scoping entity.
4	BRO	brother	The player of the role is a male sharing one or both parents in common with the scoping entity.
5	HBRO	half-brother	The player of the role is a male related to the scoping entity by sharing only one biological parent.
5	NBRO	natural brother	The player of the role is a male having the same biological parents as the scoping entity.
6	TWINBRO	twin brother	The scoper was carried in the same womb as the male player and shares common biological parents.

229 http://hl7.org/fhir/v3/RoleCode/cs.html#NFTH
230 http://hl7.org/fhir/v3/RoleCode/cs.html#NMTH
231 http://hl7.org/fhir/v3/RoleCode/cs.html#FTHFOST
232 http://hl7.org/fhir/v3/RoleCode/cs.html#MTHFOST
233 http://hl7.org/fhir/v3/RoleCode/cs.html#STPFTH
234 http://hl7.org/fhir/v3/RoleCode/cs.html#STPMTH

Level	Code	Display	Definition
7	FTWINBRO	fraternal twin brother	The scoper was carried in the same womb as the male player and shares common biological parents but is the product of a distinct egg/sperm pair.
7	ITWINBRO	identical twin brother	The male scoper is an offspring of the same egg-sperm pair as the male player.
5	STPBRO	stepbrother	The player of the role is a son of the scoping person's stepparent.
4	HSIB	half-sibling	The player of the role is related to the scoping entity by sharing only one biological parent.
5	HBRO[235]		
5	HSIS	half-sister	The player of the role is a female related to the scoping entity by sharing only one biological parent.
4	NSIB	natural sibling	The player of the role has both biological parents in common with the scoping entity.
5	NBRO[236]		
5	NSIS	natural sister	The player of the role is a female having the same biological parents as the scoping entity.
6	TWINSIS	twin sister	The scoper was carried in the same womb as the female player and shares common biological parents.
7	FTWINSIS	fraternal twin sister	The scoper was carried in the same womb as the female player and shares common biological parents but is the product of a distinct egg/sperm pair.
7	ITWINSIS	identical twin sister	The female scoper is an offspring of the same egg-sperm pair as the female player.
5	TWIN	twin	The scoper and player were carried in the same womb and shared common biological parents.
6	TWINBRO[237]		
6	TWINSIS[238]		
6	FTWIN	fraternal twin	The scoper and player were carried in the same womb and share common biological parents but are the product of distinct egg/sperm pairs.

235 http://hl7.org/fhir/v3/RoleCode/cs.html#HBRO
236 http://hl7.org/fhir/v3/RoleCode/cs.html#NBRO
237 http://hl7.org/fhir/v3/RoleCode/cs.html#TWINBRO
238 http://hl7.org/fhir/v3/RoleCode/cs.html#TWINSIS

Level	Code	Display	Definition
7	FTWINBRO[239]		
7	FTWINSIS[240]		
6	ITWIN	identical twin	The scoper and player are offspring of the same egg-sperm pair.
7	ITWINBRO[241]		
7	ITWINSIS[242]		
4	SIS	sister	The player of the role is a female sharing one or both parents in common with the scoping entity.
5	HSIS[243]		
5	NSIS[244]		
5	STPSIS	stepsister	The player of the role is a daughter of the scoping person's stepparent.
4	STPSIB	step sibling	The player of the role is a child of the scoping person's stepparent.
5	STPBRO[245]		
5	STPSIS[246]		
3	SIGOTHR	significant other	A person who is important to one's well being; especially a spouse or one in a similar relationship. (The player is the one who is important)
4	DOMPART	domestic partner	The player of the role cohabits with the scoping person but is not the scoping person's spouse.
4	FMRSPS	former spouse	Player of the role was previously joined to the scoping person in marriage and this marriage is now dissolved and inactive. Usage Note: This is significant to indicate as some jurisdictions have different legal requirements for former spouse to access the patient's record, from a general friend.

239 http://hl7.org/fhir/v3/RoleCode/cs.html#FTWINBRO
240 http://hl7.org/fhir/v3/RoleCode/cs.html#FTWINSIS
241 http://hl7.org/fhir/v3/RoleCode/cs.html#ITWINBRO
242 http://hl7.org/fhir/v3/RoleCode/cs.html#ITWINSIS
243 http://hl7.org/fhir/v3/RoleCode/cs.html#HSIS
244 http://hl7.org/fhir/v3/RoleCode/cs.html#NSIS
245 http://hl7.org/fhir/v3/RoleCode/cs.html#STPBRO
246 http://hl7.org/fhir/v3/RoleCode/cs.html#STPSIS

Level	Code	Display	Definition
4	SPS	spouse	The player of the role is a marriage partner of the scoping person.
5	HUSB	husband	The player of the role is a man joined to a woman (scoping person) in marriage.
5	WIFE	wife	The player of the role is a woman joined to a man (scoping person) in marriage.

Appendix 10 Addressing messages using Australian Profile for Provider Directory Services (Normative)

A10.1 Addressing Introduction

The purpose of this appendix is to describe the method of population of HL7 fields and when using the Australian Profile for Provider Directory Services[247], and also how applications may use certain HL7 fields to initiate a search on the provider directory to find more information about a healthcare provider referenced in the HL7v2 message.

Message addressing happens at three layers, the involved individuals, the organisations involved and the applications involved in the message transaction.

Observation Result Unsolicited (ORU) and Patient Referral (REF) messages have both facility/organisational and intended provider/individual recipient level addressing, and optionally application level.

Other message types, including Acknowledgements (ACK), Referral responses (RRI), Order (ORM) messages and Order Responses (ORR), do not have an individual intended recipient and are always routed using facility/organisational addressing, and optionally application level addressing.

A10.1.1 Facility/Organisational level addressing

The first layer is the facility/organisation level

A10.1.1.1 MSH-4 Sending facility (HD)

Firstly the sender must indicate that it is sending the message by setting the components of the MSH-4 Sending facility (HD) (Section 2.1.9.4) (see page 39). The values for this must be the ones which have been published in the

247 http://hl7.org.au/fhir/pd/pd2

directory of the secure messaging system being used for the messaging transaction. Refer to sub points of HL7au:000043 (see page 447), *and points* HL7au:000025 (see page 441), HL7au:000029 (see page 443).

When using the Australian Profile for Provider Directory Services, the values from this field must match with the sending party's Endpoint[248][x].au-receivingfacility[249] for receiving acknowledgements or responses to this message as published in the directory of the messaging system being used for the transaction.

Each component of the MSH-4 (HD) (see page 39) field must be valued with the FHIR valueString according to each of the extensions Endpoint resource's au-receivingfacility[250] as per the following table.

HD Component	http://hl7.org.au/fhir/StructureDefinition/au-receivingfacility[251] **extension**
<namespace ID (IS)>	namespace-id
<universal ID (ST)>	universal-id
<universal ID type (ID)>	universal-id-type

A10.1.1.2 MSH-6 Receiving facility (HD)

Secondly the sender must specify the destination for the message in MSH-6 Receiving facility(HD) (Section 2.1.9.6) (see page 39) as per the values provided by the secure messaging system's directory that will be used to transmit the message.

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving party's Endpoint[252][x].au-receivingfacility[253] as published in the directory of the messaging system being used for the transaction.

Each component of the MSH-6 (HD) (see page 39) field must be valued with the FHIR valueString according to each of the extensions Endpoint resource's au-receivingfacility[254] as per the following table.

HD Component	http://hl7.org.au/fhir/StructureDefinition/au-receivingfacility[255] **extension**
<namespace ID (IS)>	namespace-id
<universal ID (ST)>	universal-id
<universal ID type (ID)>	universal-id-type

248 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint
249 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint-definitions.html#Endpoint.extension:receivingFacility
250 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint-definitions.html#Endpoint.extension:receivingFacility
251 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-receivingfacility#tabs-all
252 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint
253 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint-definitions.html#Endpoint.extension:receivingFacility
254 http://hl7.org.au/fhir/2020Aug/StructureDefinition-au-receivingfacility.html
255 http://hl7.org.au/fhir/2020Aug/StructureDefinition-au-receivingfacility.html

A10.1.2 Intended Provider/Individual recipient level addressing

The second layer is the individual provider level. This layer is used by the receiving software to deliver the received message to the intended recipient. (It may also be used by the secure messaging systems as a backup routing mechanism to resolve endpoints where MSH-6 Receiving facility (HD) cannot be used based on provider to organisational mappings available in those systems.)

Depending on the message type Individual recipient addressing is achieved using either the HL7 XCN datatype or for referral message individual provider/recipient level addressing is performed using the PRD segments. See the sections below for mappings for each.

For ORU messages PV1-9 (see page 79) (XCN datatype) is designated as the target provider for the message.

A10.1.2.1 XCN Datatype

This XCN data type (see section 3.29 XCN - extended composite ID number and name for persons (see page 187)) is used extensively appearing in the PV1, ORC, RXO, RXE, OBR and SCH segments, as well as others, where there is a need to specify the ID number and name of a person.

Below are a list of common XCN datatypes contained within message segments. The PV1-9 (see page 79) Target doctor is critical for result delivery on ORU messages, OBR-28 Result copies .

Result copies to informs the receiver of other recipients of the report, and in the context of an order message (ORM) allows specification of result copy recipients.

Populating these fields correctly allows for querying the provider directory for further information about the provider.

- 2.2.2.7 PV1-7 Attending doctor (XCN) 00137 (see page 78)
- 2.2.2.8 PV1-8 Referring doctor (XCN) 00138 (see page 79)
- 2.2.2.9 PV1-9 Consulting doctor (XCN) 00139 (see page 79)
- 2.2.2.17 PV1-17 Admitting doctor (XCN) 00147 (see page 83)
- 2.2.2.52 PV1-52 Other healthcare provider (XCN) 01274 (see page 94)
- 2.2.3.13 PV2-13 Referral source code (XCN) 00714 (see page 99)
- 4.4.1.10 OBR-10 Collector identifier (XCN) 00244 (see page 214)
- 4.4.1.16 OBR-16 Ordering provider (XCN) 00226 (see page 223)
- 4.4.1.28 OBR-28 Result copies to (XCN) 00260 (see page 229)
- 5.4.1.10 ORC-10 Entered by (XCN) 00224 (see page 295)
- 5.4.1.11 ORC-11 Verified by (XCN) 00225 (see page 295)
- 5.4.1.12 ORC-12 Ordering provider (XCN) 00226 (see page 296)
- 5.4.1.19 ORC-19 Action by (XCN) 00233 (see page 298)
- 4.4.2.16 OBX-16 Responsible observer (XCN) 00584 (see page 245)
- 7.3.10.18 IAM-18 Statused by person (XCN) 01563 (see page 341)
- 7.3.11.12 ORC-12 Ordering provider (XCN) 00226 (see page 343)
- 7.3.16.14 RXO-14 Ordering provider's DEA number (XCN) 00305 (see page 351)
- 7.3.16.15 RXO-15 Pharmacist/treatment supplier's verifier ID (XCN) 00306 (see page 351)

The sending system should populate these fields according to the provider directory information which will facilitate downstream directory reverse lookups on the provider identifier either on the PractitionerRole or HealthcareService resource.

Two classes of provider are supported:

- Individual Practitioner providers
- Healthcare Service Providers

Each class of provider has different mapping rules for population from the provider directory into XCN datatype component and subcomponents.

A10.1.2.1.1 Individual Practitioner providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving provider's PractitionerRole[256] and related PractitionerRole[257].practitioner[258] resources as published in the directory of the messaging system being used for the transaction.

XCN Component / sub-component	FhirResource element	Comment
<ID number (ST)>	PractitionerRole[259].identifier[260].value[261]	Select an identifier common understood identifier from the PractitionerRole.identifier list. Also map the assigning authority component associated with the selected identifier. See below in this table for mapping description.
<family name (FN)>		
<surname (ST)>	PractitionerRole[262].practitioner[263].name[usual].family	
<own surname prefix (ST)>	-	
<own surname (ST)>	-	
<surname prefix from partner/ spouse (ST)>	-	
<surname from partner/spouse (ST)>	-	

256 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
257 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
258 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
259 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole
260 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole.identifier
261 http://hl7.org/fhir/R4/datatypes-definitions.html#Identifier.value
262 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
263 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner

XCN Component / sub-component	FhirResource element	Comment
<given name (ST)>	PractitionerRole[264].practitioner[265].name[usual].given[0]	
<second and further given names or initials thereof (ST)>	PractitionerRole[266].practitioner[267].name[usual].given[1..*]	Concatenate with spaces separating names
<suffix (e.g., JR or III) (ST)>	PractitionerRole[268].practitioner[269].name[usual].suffix	
<prefix (e.g., DR) (ST)>	PractitionerRole[270].practitioner[271].name[usual].prefix	
<degree (e.g., MD) (IS)>	-	
<source table (IS)>	-	
<assigning authority (HD)>		The 3 assigning authority components below must relate to the same PractitionerRole[272].identifier[273] instance used for mapping the <ID number (ST)> above.
<namespace ID (IS)>	PractitionerRole[274].identifier[275].au-assigningauthority.namespace-id.valueString	
<universal ID (ST)>	PractitionerRole[276].identifier[277].au-assigningauthority.universal-id.valueString	
<universal ID type (ID)>	PractitionerRole[278].identifier[279].au-assigningauthority.universal-id-type.valueString	

264 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
265 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
266 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
267 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
268 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
269 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
270 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
271 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
272 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole
273 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole.identifier
274 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole
275 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole.identifier
276 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole
277 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole.identifier
278 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole
279 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole.identifier

XCN Component / sub-component	FhirResource element	Comment
<name type code (ID)>	PractitionerRole[280].practitioner[281].name[282][usual].use[283]. Apply the concept mapping cm-name-use-v2[284].	See Table 0200 (see page 62) For usual use "D". For official use "L"
<identifier check digit (ST)>		
<code identifying the check digit scheme employed (ID)>		
<identifier type code (IS)>	PractitionerRole[285].identifier[286].type[287].coding[288].code[289]	
<assigning facility (HD)>	-	
<name representation code (ID)>	-	
<name context (CE)>		See 3.29.16 Name context (CE) (see page 191). It is not necessary to populate this component with the resource type as in the case of HealthcareService as this PractitionerRole is the default resource to search.
<identifier (ST)>		
<text (ST)>		
<name of coding system (IS)>		
<name validity range (DR)>		
<name assembly order (ID)>		

280 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
281 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitioner.html
282 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitioner-definitions.html#Practitioner.name
283 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitioner-definitions.html#Practitioner.name:directory-practitioner-name.use
284 http://hl7.org/fhir/ConceptMap/cm-name-use-v2
285 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole
286 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole.identifier
287 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-practitionerrole-definitions.html#PractitionerRole.identifier:medicareProviderNumber.type
288 http://hl7.org/fhir/R4/datatypes-definitions.html#CodeableConcept.coding
289 http://hl7.org/fhir/R4/datatypes-definitions.html#Coding.code

A10.1.2.2.1 Healthcare Service Providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving party's HealthcareService[290] resource as published in the directory of the messaging system being used for the transaction.

XCN Component / sub-component	FhirResource element	Comment
<ID number (ST)>	HealthcareService[291].identifier[292].value	Select an identifier common understood identifier from the HealthcareService[293].identifier[294] list. Also map the assigning authority component associated with the selected identifier. See below in this table for mapping description.
<family name (FN)>		
<surname (ST)>	HealthcareService[295].providedBy.name[296]	e.g. The medical centre's name
<own surname prefix (ST)>	-	
<own surname (ST)>	-	
<surname prefix from partner/ spouse (ST)>	-	
<surname from partner/spouse (ST)>	-	
<given name (ST)>	HealthcareService[297].name	Name of the service. e.g. "General Practice"

290 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
291 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
292 http://build.fhir.org/datatypes.html#Identifier
293 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
294 http://build.fhir.org/datatypes.html#Identifier
295 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
296 http://providedby.name/
297 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice

XCN Component / sub-component	FhirResource element	Comment
<second and further given names or initials thereof (ST)>	HealthcareService.location.name[298]	
<suffix (e.g., JR or III) (ST)>		
<prefix (e.g., DR) (ST)>		
<degree (e.g., MD) (IS)>		
<source table (IS)>		
<assigning authority (HD)>		The 3 assigning authority components below must relate to the same HealthcareService[299].identifier[300] instance used for mapping the <ID number (ST)> above.
<namespace ID (IS)>	HealthcareService[301].identifier[302].au-assigningauthority.namespace-id.valueString	
<universal ID (ST)>	HealthcareService[303].identifier[304].au-assigningauthority.universal-id.valueString	
<universal ID type (ID)>	HealthcareService[305].identifier[306].au-assigningauthority.universal-id-type.valueString	

298 http://healthcareservice.location.name/
299 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
300 http://build.fhir.org/datatypes.html#Identifier
301 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-healthcareservice-definitions.html#HealthcareService
302 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-healthcareservice-definitions.html#HealthcareService.identifier
303 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-healthcareservice-definitions.html#HealthcareService
304 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-healthcareservice-definitions.html#HealthcareService.identifier
305 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-healthcareservice-definitions.html#HealthcareService
306 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-healthcareservice-definitions.html#HealthcareService.identifier

XCN Component / sub-component	FhirResource element	Comment
<name type code (ID)>	"D"	See Table 0200 (see page 62) For usual use "D". For official use "L"
<identifier check digit (ST)>		
<code identifying the check digit scheme employed (ID)>		
<identifier type code (IS)>	HealthcareService[307].identifier[308].type.coding.code	
<assigning facility (HD)>	?	
<name representation code (ID)>	?	
<name context (CE)>		The purpose of this field when mapping a HealthcareService is to support the use case of a receiver performing a lookup using the FHIR directory service using HealthcaseService resource instead of PractitionerRole which is the default. See 3.29.16 Name context (CE) (see page 191).
<identifier (ST)>	"HealthcareService"	
<text (ST)>	"Healthcare Service"	
<name of coding system (IS)>	"FHIR-ResourceType"	
<name validity range (DR)>		

307 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-healthcareservice-definitions.html#HealthcareService
308 http://hl7.org.au/fhir/pd/pd2/StructureDefinition-au-pd-healthcareservice-definitions.html#HealthcareService.identifier

XCN Component / sub-component	FhirResource element	Comment
<name assembly order (ID)>		

A10.1.2.2 PRD Segment

Although for a specific message only 2 providers are necessary, additional providers involved with the patient care must also have their PRD segments populated from a reliable provider directory source such that receivers can utilise the information and include those providers in future correspondence, this means that PRD-2 and PRD-7 must be populated for all PRD segments according to the same rules.

A10.1.2.2.1 PRD-1 Provider role (CE)

For details of this field refer to Refer to 7.3.3.1 PRD-1 Provider role (CE) (see page 331).

Sending systems must indicate a single authoring provider of the message by indicating the PRD segment as "AP" in PRD-1 (see Table 0286 (see page 331))

Sending systems must indicate a single intended provider recipient for each message by indicating that provider's PRD segment with "IR" in PRD-1.

Both of these are done using PRD segments (see 7.3.3 PRD - Provider Data segment (see page 331)).

In addition to the Authoring and Intended Recipient providers, an appropriate provider role must be set for each provider according to the referral scenario.

A10.1.2.2.2 PRD-2 Provider name (XPN)

For details of this field refer to Refer to 7.3.3.2 PRD-2 Provider name (XPN) (see page 332).

This field is where the name of the provider for the PRD must be populated. For the intended recipient and authoring provider, these fields must be populated from the provider directory service of the secure messaging system being used to transmit the message.

Two classes of provider are supported:

- Individual Practitioner providers
- Healthcare Service Providers

Each class of provider has different mapping rules for population from the provider directory into PRD-2 Provider name (XPN) name component and subcomponents. (See 7.3.2.2 PRD-2 Provider name (XPN) (see page 332)).

A10.1.2.2.2.1 Individual Practitioner providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving provider's PractitionerRole[309].practitioner[310] resource as published in the directory of the messaging system being used for the transaction.

XPN Component / sub-component	FhirResource element	Comment
<family name (FN)>	-	
<surname (ST)>	PractitionerRole[311].practitioner[312].name[usual].family	
<own surname prefix (ST)>	-	
<own surname (ST)>	-	
<surname prefix from partner/ spouse (ST)>	-	
<surname from partner/spouse (ST)>	-	
<given name (ST)>	PractitionerRole[313].practitioner[314].name[usual].given[0]	
<second and further given names or initials thereof (ST)>	PractitionerRole[315].practitioner[316].name[usual].given[1..*]	Concatenate with spaces separating names
<suffix (e.g., JR or III) (ST)>	PractitionerRole[317].practitioner[318].name[usual].suffix	
<prefix (e.g., DR) (ST)>	PractitionerRole[319].practitioner[320].name[usual].prefix	
<degree (e.g., MD) (IS)>	-	

309 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
310 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
311 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
312 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
313 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
314 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
315 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
316 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
317 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
318 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
319 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
320 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner

XPN Component / sub-component	FhirResource element	Comment
<name type code (ID) >	PractitionerRole[321].practitioner[322].name[usual]. use. Apply the concept mapping cm-name-use-v2[323].	See Table 0200 (see page 62) For usual use "D". For official use "L"
<name representation code (ID)>	-	
<name context (CE)>	-	
<name validity range (DR)>	-	
<name assembly order (ID)>	-	

A10.1.2.2.2.2 Healthcare Service Providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving party's HealthcareService[324].name as published in the directory of the messaging system being used for the transaction.

XPN Component / sub-component	FhirResource element	Comment
<family name (FN)>	-	
<surname (ST)>	HealthcareService[325].providedBy. name[326]	e.g. The medical centre's name
<own surname prefix (ST)>	-	
<own surname (ST)>	-	
<surname prefix from partner/spouse (ST)>	-	
<surname from partner/spouse (ST)>	-	
<given name (ST)>	HealthcareService[327].name	Name of the service. e.g. "General Practice"
<second and further given names or initials thereof (ST)>	HealthcareService.location.name[328]	e.g. "Essendon"

321 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
322 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitioner
323 http://hl7.org/fhir/ConceptMap/cm-name-use-v2
324 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
325 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
326 http://providedBy.name
327 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
328 http://HealthcareService.location.name

XPN Component / sub-component	FhirResource element	Comment
<suffix (e.g., JR or III) (ST)>		
<prefix (e.g., DR) (ST)>		
<degree (e.g., MD) (IS)>		
<name type code (ID) >	"D"	See Table 0200 (see page 62) For usual, use "D". For official, use "L"
<name representation code (ID)>	-	
<name context (CE)>	-	
<name validity range (DR)>	-	
<name assembly order (ID)>	-	

A10.1.2.2.3 PRD-3 Provider address (XAD)

For details of this field refer to Refer to 7.3.3.3 PRD-3 Provider address (XAD) (see page 332).

This field is where the name of the recipient be populated. These fields must be populated from the provider directory service of the secure messaging system being used to transmit the message.

Two classes of provider are supported:

- Individual Practitioner providers
- Healthcare Service Providers

Each class of provider has different mapping rules for population of fields from the provider directory into PRD-3 Provider address (XAD) name component and subcomponents. (See 7.3.3.3 PRD-3 Provider address (XAD) (see page 332))

A10.1.2.2.3.1 Individual Practitioner providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving provider's PractitionerRole[329].location address data type as published in the directory of the messaging system being used for the transaction.

XAD Component / sub-component	FhirResource element	Comment
<street address (SAD)>		
<street or mailing address (ST)>	PractitionerRole[330].location.address.line[0..*]	Concatenate each address.line separated by a comma ",".

329 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
330 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole

XAD Component / sub-component	FhirResource element	Comment
<street name (ST)>		
<dwelling number (ST)>		
<other designation (ST)>		
<city (ST)>	PractitionerRole[331].location.address.city	
<state or province (ST)>	PractitionerRole[332].location.address.state	
<zip or postal code (ST)>	PractitionerRole[333].location.address.postalCode	
<country (ID)>	PractitionerRole[334].location.address.country	
<address type (ID)>	PractitionerRole[335].location.address.type	Map values for postal or office. postal = 'M' physical = 'O'
<other geographic designation (ST)>		
<county/parish code (IS)>		
<census tract (IS)>		
<address representation code (ID)>		
<address validity range (DR)>		
<date range start date/time (TS)>		
<date range end date/time (TS)>		

331 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
332 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
333 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
334 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
335 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole

A10.1.2.2.3.2 Healthcare Service providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving provider's HealthcareService[336].location [337]address data type as published in the directory of the messaging system being used for the transaction.

XAD Component / sub-component	FhirResource element	Comment
<street address (SAD)>		
<street or mailing address (ST)>	HealthcareService[338].location[339].address.line[0..*]	Concatenate each address.line separated by a comma ",".
<street name (ST)>		
<dwelling number (ST)>		
<other designation (ST)>		
<city (ST)>	HealthcareService[340].location[341].address.city	
<state or province (ST)>	HealthcareService[342].location[343].address.state	
<zip or postal code (ST)>	HealthcareService[344].location[345].address.postalCode	
<country (ID)> ^	HealthcareService[346].location[347].address.country	
< address type (ID)>	HealthcareService[348].location[349].address.type	Map values for postal or office. postal = 'M' physical = 'O'

336 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
337 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-location
338 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
339 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-location
340 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
341 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-location
342 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
343 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-location
344 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
345 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-location
346 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
347 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-location
348 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
349 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-location

XAD Component / sub-component	FhirResource element	Comment
<other geographic designation (ST)>		
<county/parish code (IS)>		
<census tract (IS)>		
<address representation code (ID)>		
<address validity range (DR)>		
<date range start date/time (TS)>		
<date range end date/time (TS)>		

A10.1.2.2.5 PRD-5 Provider communication information (XTN)

For details of this field refer to Refer to 7.3.3.5 PRD-5 Provider communication information (XTN) (see page 333).

A10.1.2.2.5.1 Individual Practitioner providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving provider's PractitionerRole[350].telecom[351] data type as published in the directory of the messaging system being used for the transaction.

XTN Component / sub-component	FhirResource element	Comment
[NNN] [(999)]999-9999 [X99999] [B99999] [C any text]	PractitionerRole[352].telecom[353].value	if ContactPoint[354].system is either phone, fax, pager, sms
<telecommunication use code (ID)>	PractitionerRole[355].telecom[356].use	Apply the concept mapping cm-contact-point-use-v2[357].
<telecommunication equipment type (ID)>	PractitionerRole[358].telecom[359].system	Apply the concept mapping cm-contact-point-system-v2[360].

350 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
351 http://build.fhir.org/datatypes.html#ContactPoint
352 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
353 http://build.fhir.org/datatypes.html#ContactPoint
354 http://hl7.org/fhir/R4/datatypes.html#ContactPoint
355 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
356 http://build.fhir.org/datatypes.html#ContactPoint
357 http://build.fhir.org/cm-contact-point-use-v2
358 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
359 http://build.fhir.org/datatypes.html#ContactPoint
360 http://build.fhir.org/cm-contact-point-system-v2

XTN Component / sub-component	FhirResource element	Comment
<email address (ST)>	PractitionerRole[361].telecom[362].value	if ContactPoint.use.code = email
<country code (NM)>		
<area/city code (NM)>		
<phone number (NM)>		
<extension (NM)>		
<any text (ST)>		

A10.1.2.2.5.2 Healthcare Service providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving provider's HealthcareService[363].telecom[364] data type as published in the directory of the messaging system being used for the transaction.

XTN Component / sub-component	FhirResource element	Comment
[NNN] [(999)]999-9999 [X99999] [B99999] [C any text]	HealthcareService[365].telecom[366].value	if ContactPoint[367].system is either phone, fax, pager, sms
<telecommunication use code (ID)>	HealthcareService[368].telecom[369].use	Apply the concept mapping cm-contact-point-use-v2[370].
<telecommunication equipment type (ID)>	HealthcareService[371].telecom[372].system	Apply the concept mapping cm-contact-point-system-v2[373].
<email address (ST)>	HealthcareService[374].telecom[375].value	if ContactPoint.use.code = email
<country code (NM)>		
<area/city code (NM)>		

361 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
362 http://build.fhir.org/datatypes.html#ContactPoint
363 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
364 http://build.fhir.org/datatypes.html#ContactPoint
365 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
366 http://build.fhir.org/datatypes.html#ContactPoint
367 http://hl7.org/fhir/R4/datatypes.html#ContactPoint
368 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
369 http://build.fhir.org/datatypes.html#ContactPoint
370 http://build.fhir.org/cm-contact-point-use-v2
371 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
372 http://build.fhir.org/datatypes.html#ContactPoint
373 http://build.fhir.org/cm-contact-point-system-v2
374 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
375 http://build.fhir.org/datatypes.html#ContactPoint

XTN Component / sub-component	FhirResource element	Comment
<phone number (NM)>		
<extension (NM)>		
<any text (ST)>		

A10.1.2.2.7 PRD-7 Provider identifiers (CM)

For details of this field refer to Refer to 7.3.3.7 PRD-7 Provider identifiers (CM) (see page 333).

A10.1.2.7.1 Individual Practitioner providers

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving provider's PractitionerRole[376].identifier[377] data type as published in the directory of the messaging system being used for the transaction.

There may be multiple identifiers in the PractitionerRole identifier list. It is important to map the routable identifiers in the order specified in the directory entry. Note that HL7v2 systems often will consider only the first repeat of this field.

CM Component / sub-component	FhirResource element	Comment
<ID number (ST)>	PractitionerRole[378].identifier[379].value	
<type of ID number (IS)>	PractitionerRole[380].identifier[381].au-assigningauthority.namespace-id	
<other qualifying info (ST)>	PractitionerRole[382].identifier[383].type.coding.code	e.g. "VDI" or "UPIN"

A10.1.2.7.2 Healthcare Service providers

A10.1.2.7.2.1 Australian Profile for Provider Directory Services
When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving provider's HealthcareService[384].identifier[385] data type as published in the directory of the messaging system being used for the transaction.

376 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
377 http://build.fhir.org/datatypes.html#Identifier
378 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
379 http://build.fhir.org/datatypes.html#Identifier
380 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
381 http://build.fhir.org/datatypes.html#Identifier
382 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-practitionerrole
383 http://build.fhir.org/datatypes.html#Identifier
384 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
385 http://build.fhir.org/datatypes.html#Identifier

CM Component / sub-component	FhirResource element	Comment
<ID number (ST)>	HealthcareService[386].identifier[387].value	
<type of ID number (IS)>	HealthcareService[388].identifier[389].au-assigningauthority[390].namespace-id[391]	
<other qualifying info (ST)>	HealthcareService[392].identifier[393].type.coding.code	e.g. "VDI" / "UPIN"

A10.1.2.7.3 FHIR Extensions for HL7 v2 Assigning Authority (HD)

An extension has been defined in the Australian FHIR Profile for allowing all components of the HL7 v2 Assigning Authority field. This can be used in various places where assigning authorities are used, such as in HL7v2 datatypes XCN, XON, CX.

HD Component	http://hl7.org.au/fhir/StructureDefinition/au-assigningauthority[394] extension
<namespace ID (IS)>	namespace-id
<universal ID (ST)>	universal-id
<universal ID type (ID)>	universal-id-type

A10.1.3 Application level addressing

The third layer is the application level addressing. Receivers may publish in their directory entries their desired receiving application. This allows for application based routing within an organisation. Senders must respect the published receiving application as published in the directory and value the appropriate MSH application fields accordingly.

A10.1.3.1 MSH-3 Sending application (HD)

Firstly the sender application must indicate that it is sending the message by setting the components of the MSH-3 Sending application (HD) (Section 2.1.9.3) (see page 38). The values for this must be the ones which have been published in the directory of the secure messaging system being used for the messaging transaction.

386 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
387 http://build.fhir.org/datatypes.html#Identifier
388 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
389 http://build.fhir.org/datatypes.html#Identifier
390 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-assigningauthority#tabs-all
391 http://hl7.org.au/fhir/StructureDefinition/au-assigningauthority/namespace-id
392 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-healthcareservice
393 http://build.fhir.org/datatypes.html#Identifier
394 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-assigningauthority#tabs-all

When using the Australian Profile for Provider Directory Services, the values from this field must match with the sending party's Endpoint[395][x].au-receivingapplication[396] for receiving acknowledgements or responses to this message as published in the directory of the messaging system being used for the transaction.

Each component of the MSH-3 (HD) (see page 38) field must be valued with the FHIR valueString according to each of the extensions Endpoint resource's au-receivingapplication[397] as per the following table.

HD Component	http://hl7.org.au/fhir/StructureDefinition/au-receivingapplication[398] **extension**
<namespace ID (IS)>	namespace-id
<universal ID (ST)>	universal-id
<universal ID type (ID)>	universal-id-type

A10.1.3.2 MSH-5 Receiving application (HD)

Secondly the sender must specify the destination application for the message in MSH-5 Receiving application (HD) (Section 2.1.9.5) (see page 39) as per the values provided by the secure messaging system's directory that will be used to transmit the message.

When using the Australian Profile for Provider Directory Services, the values from this field must be copied from receiving party's Endpoint[399][x].au-receivingapplication[400] as published in the directory of the messaging system being used for the transaction when the extension is present.

Each component of the MSH-5 (HD) (see page 39) field must be valued with the FHIR valueString according to each of the extensions Endpoint resource's au-receivingapplication[401] as per the following table.

HD Component	http://hl7.org.au/fhir/StructureDefinition/au-receivingapplication[402] **extension**
<namespace ID (IS)>	namespace-id
<universal ID (ST)>	universal-id
<universal ID type (ID)>	universal-id-type

A10.2 Responsibilities of Receivers

Intended recipients which are Healthcare Services or inactive providers must be managed by the receiving system to ensure the message content is reviewed for triage. See HL7au:000025.1.1 (see page 441).

395 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint
396 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-receivingapplication
397 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-receivingapplication
398 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-receivingapplication#tabs-all
399 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-pd-sm-endpoint
400 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-receivingapplication
401 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-receivingapplication
402 http://build.fhir.org/ig/hl7au/au-fhir-pd/StructureDefinition-au-receivingapplication#tabs-all

Received messages without an intended recipient which must be managed by the receiving system to ensure the message content is reviewed for triage. See HL7au:000025.1.2 (see page 441).

Further guidelines are available from the following

- SPIA[403] - in particular Chapter 10 "Safe pathology reporting".
- RACGP - Standards for general practices[404].

403 https://www.rcpa.edu.au/getattachment/ed0da9c5-af61-4c5a-ace4-a06812911407/SPIA-(APUTS)-Standards-for-Pathology-Informatics-i.aspx
404 https://www.racgp.org.au/running-a-practice/practice-standards/standards-5th-edition/standards-for-general-practices-5th-ed