



Australian Government

Australian Digital Health Agency



HIPS

Diagnostic Imaging Results HL7 v2.4 Profile

7 November 2016

V6.1

Approved for external use

Australian Digital Health Agency

Level 25, 56 Pitt Street
Sydney, NSW 2000
Australia
www.digitalhealth.gov.au

Acknowledgements**Council of Australian Governments**

The Australian Digital Health Agency is jointly funded by the Australian Government and all state and territory governments.

HL7 International

This document includes excerpts of HL7™ International standards and other HL7 International material. HL7 International is the publisher and holder of copyright in the excerpts. The publication, reproduction and use of such excerpts is governed by the HL7 IP Policy (see <http://www.hl7.org/legal/ippolicy.cfm>) and the HL7 International License Agreement. HL7 and CDA are trademarks of Health Level Seven International and are registered with the United States Patent and Trademark Office.

Disclaimer

The Australian Digital Health Agency ("the Agency") makes the information and other material ("Information") in this document available in good faith but without any representation or warranty as to its accuracy or completeness. The Agency cannot accept any responsibility for the consequences of any use of the Information. As the Information is of a general nature only, it is up to any person using or relying on the Information to ensure that it is accurate, complete and suitable for the circumstances of its use.

Document control

This document is maintained in electronic form and is uncontrolled in printed form. It is the responsibility of the user to verify that this copy is the latest revision.

Copyright © 2016 Australian Digital Health Agency

This document contains information which is protected by copyright. All Rights Reserved. No part of this work may be reproduced or used in any form or by any means – graphic, electronic, or mechanical, including photocopying, recording, taping, or information storage and retrieval systems – without the permission of the Australian Digital Health Agency. All copies of this document must include the copyright and other information contained on this page.

Document information

Key information

Owner	Executive General Manager, Innovation & Development
Contact for enquiries	Australian Digital Health Agency Help Centre
t:	1300 901 001
e:	help@digitalhealth.gov.au

Product version history

Product version	Date	Release comments
1.0	February 2014	Initial release (HIPS 4.1.0).
2.0	February 2015	See release note (NEHTA-2040:2015) for details of changes and bug fixes.
2.0.1 2.0.2		Unpublished updates.
2.0.3	February 2016	See release note (NEHTA-2185:2016) for details of changes and bug fixes.
6.0	May 2016	See release note (NEHTA-2263:2016) for details of changes and bug fixes.
6.1	November 2016	See release note (DH-2445:2016) for details of changes and bug fixes.

Table of contents

1	Introduction	5
1.1	Purpose	5
1.2	Scope.....	5
1.3	Assumptions	5
1.4	Definitions and Acronyms	5
1.5	Current Environment.....	6
2	High Level HL7 – HIPS Diagnostic Imaging Usage.....	7
2.1	Medical Record Numbers.....	7
2.1.1	Zero Padding of MRNs	8
2.2	R01 – Send a Diagnostic Imaging Report	9
2.2.1	MSH Mappings.....	10
2.2.2	PID Mappings	10
2.2.3	OBR Mappings	14
2.2.4	OBX Mappings	16
3	Low Level Protocol	18
3.1	Communications	18
3.2	Character Encoding/Standard	18
3.3	Message Framing.....	18
4	Application Level Protocol	20
4.1	Message Definitions	20
4.1.1	ORU – R01 Diagnostic Imaging Result Message	20
4.2	Segment Definition Notes	20
4.3	Common Segment Definitions	22
4.3.1	MSH – Message Header	22
4.3.2	PID – Patient Identification Segment	23
4.3.3	OBR – Observation Request	28
4.3.4	OBX – Observational Results	30
5	Data Type Definitions	32
5.1	XTN Data Type	32
5.2	TS Data Type	32
5.3	XCN Data Type	33
5.4	CE Data Type	34

1 Introduction

1.1 Purpose

The purpose of this document is to provide the definition for the HL7 message interface for notifying diagnostic imaging report events to the Healthcare Identifiers Service and My Health Record system.

Please note that this version of the HL7 profile for HIPS has originated from the AS 4700.2-2012 - Australian Standard Implementation of Health Level Seven (HL7) Version 2.4, Part 2: Pathology and diagnostic imaging (diagnostics) specification and may contain more information than required in forming HL7 messages for loading to HIPS. HIPS will subsequently validate and package a CDA document which is uploaded to the My Health Record system.

It can be used by health facilities to understand the information passed in the HL7 messages and the portions relevant to HIPS.

This document describes the message and segment definitions that are required, expected and processed by the HIPS application.

HIPS uses the standard message format described herein. The standard message format in use is HL7 2.4.

1.2 Scope

This profile covers all messages/message segments that have been standardised for diagnostic imaging reporting.

This profile does not describe any functional requirements, such as archiving or error reporting, as these are to be covered by other documentation.

1.3 Assumptions

The HL7 MLLP interface for sending Diagnostic Imaging Reports to the HIPS application has the following constraints:

- HL7 message segments will be sent in the order shown under "Message Definition" below;
- HL7 message continuation standard will not be used and therefore each message sent/received must be complete;
- Confidential information sent across the interface will be accepted "as is";
- HL7 Sequence Numbering is not used.

1.4 Definitions and Acronyms

Item	Definition
ADT	Admission, Discharge, Transfer. Class of HL7 message types. ADT is also an Application Code used in MSH.3 and MSH.5

Item	Definition
ESB	Enterprise Service Bus – integration hub for routing and transforming messages within and between healthcare facilities.
HL7	Health Level Seven
PMI	Patient Master Index – often used to describe an informal class of HL7 ADT messages – includes updates to patient demographics and merge/unmerge message types. PMI is also an Application Code used in MSH.3 and MSH.5
MRN	<p>Medical Record Number, identified by the code “MR” in PID-3.</p> <p>Ideally one MRN is allocated by the hospital for each patient, though it is common to temporarily allocate a new MRN for emergency patients until their identity is confirmed. These temporary MRNs should be merged back to the original MRN for the patient using an A36 Merge MRN message.</p> <p>This number stored in HospitalPatient.Mrn and is the primary identifier used to find the existing patient records in the HIPS database.</p>
OBR	Observation Request Segment of the HL7 message. Is used to transmit information specific to an order for a diagnostic study or observation, physical exam, or assessment.
OBX	Observation Result Segment of the HL7 message. Is used to transmit a single observation or observation fragment.
ORC	Common Order Segment of the HL7 message. Is used to transmit fields that are common to all orders.
ORU	Unsolicited transmission of an observation message. R01 event.
OPD	Outpatient Department – often used to describe an informal class of HL7 message types – such as appointment/booking/scheduling messages. OPD is also an Application Code used in MSH.3 and MSH.5
SAUHI	<p>Unique Health Identifier – this code is used in PID-3 or PID-2 to identify the enterprise ID for the patient, which determines which PatientMaster the patient is attached to. HospitalPatient records will move from one PatientMaster to another if their SAUHI changes. See the HIPS Merging profile for more details. It is perfectly acceptable to operate HIPS using only the MRN and not to send in enterprise IDs.</p>

1.5 Current Environment

The message segments defined herein are the segments used in the HIPS application and cover only the essential ORU message segments.

2 High Level HL7 – HIPS Diagnostic Imaging Usage

HIPS may be used in one of the following models:

- No HI Service connectivity:
 - All IHIs are obtained by a separate application. The ValidatedIhi parameter is used on all calls to HIPS services and HIPS creates stub patient and stub episode records. HIPS will trust the IHI has been validated by another system.
 - The HPI-I of the document author is contained within the HL7 message. HIPS will trust the HPI-I has been validated by another system.
- With HI Service connectivity:
 - HIPS performs IHI search and validation, and checks for advertised My Health Record. The GetValidatedIhi method is used to retrieve the IHI from HIPS. No episode related events are notified. When uploading or removing a document, the ValidatedIhi parameter is used and HIPS creates stub episode records.
 - HIPS performs HPI-I look-up from HIPS data store based on local identifier contained within message.

2.1 Medical Record Numbers

When processing HL7 messages, HIPS will identify the Subject of Care (Patient) using a list of identifiers in the PID-3 field. This field may contain an internal patient identifier, MRNs from multiple assigning authorities, in addition to a Medicare number, DVA file number and/or IHI.

Each internal patient identifier or MRN must be supplied with CX-5 Type Code "PI" or "MR" and CX-4 Assigning Authority identifying the scope/origin of the identifier.

Example 1, an identifier from the diagnostic imaging laboratory with NATA number 2134:

123456^^^NATA2134^PI

Example 2, an identifier from the diagnostic imaging practice with LSPN 8234:

123456^^^LSPN8234^PI

The internal patient identifiers for use in diagnostic imaging HL7 messages must be configured in the HIPS HospitalCode table and have a CodeSystemId of 114 which corresponds to a code system "patientIdAuthCd".

Example 3, an MRN from a Hospital (RNH):

123456^^^RNH^MR

Where "123456" is the MRN itself, "RNH" is a code for the hospital that allocated this MRN, and "MR" is a code that indicates that this is an MRN.

The maximum MRN length that HIPS can handle is 20 characters.

The hospital codes for use in diagnostic imaging HL7 messages must be configured in the HIPS HospitalCode table and have a CodeSystemId of 2 which corresponds to a code system "pasFacCd".

The Medicare number, if known, will be supplied with type code "MC" and may or may not include the Individual Reference Number (IRN). The value must be either 10 digits (without IRN) or 11 digits (with IRN). For example:

5123123123^^^AUSHIC^MC

51231231231^^^AUSHIC^MC

The DVA file number, if known, will be supplied with type code "DVA" (as in AS 4700.1-2001) or with separate type codes for gold "DVG", orange "DVO" or white "DVW" (as in AS 4700.1-2005). For example:

Q 331321^^^DVA

VX141145A^^^AUSDVA^DVG

The IHI number may be supplied in the PID-3 field with type code "NI" and assigning authority "AUSHIC". For example:

8003608833357361^^^AUSHIC^NI.

2.1.1 Zero Padding of MRNs

Laboratories operate various clinical information systems that allocate MRNs of various lengths. Some PAS systems allocate MRNs of a variable length with no zeros on the left, while others automatically add zeros on the left to pad to either 6 or 8 digits.

The functional design specifies that HIPS will standardise on an MRN length of 9 digits. To achieve this, any MRN from a PAS must have zeros added to the beginning, until it reaches 9 digits in length.

HIPS can handle both numeric and non-numeric MRNs from 1 to 20 characters in length. To meet the requirement, any MRN that is input via the HL7 interface will have '0' characters added to the beginning until the length reaches 9 characters. This applies equally to numeric and non-numeric MRNs.

If the MRN is already 9 or more characters in length, then no further padding is added.

For example:

- "123456" (6 digits) will be padded with 3 zeros and stored as "000123456"
- "123456789" (9 digits) will not be padded
- "1234567890123456" (16 digits) will not be padded
- "ABCD" (4 letters) will be padded with 5 zeros and stored as "00000ABCD"

2.2 R01 – Send a Diagnostic Imaging Report

The ORU^R01 message structure is as follows:

Segment	Description
MSH	Message Header
PID	Patient Identification
[PV1]	Patient Visit
{	
ORC	Common Order
OBR	Observation Request
{OBX}	Observation Result
}	

The following HL7 message can be used to send a Diagnostic Imaging Report the My Health Record system.

```
MSH|^~\&|SYNAPSE RIS|ROYAL CHAMONIX HOSPITAL^RCH^L|SynapsePACS|Northwest
Medical
Imaging^NWMI.SynapseRIS^L|20151023121828+1000||ORU^R01^ORU_R01|201112141218288
74|P|2.4^AUS||AL|NE|AUS|8859/1|EN^^ISO|
PID|||756764^^^NWMI^MR~000123456^^^RCH^MR~2951051141^^^AUSHIC^MC||FARMER^HAROL
D^^^Mr^L^A||19911219|M|||4 North Street^^MARY
SPRINGS^VIC^3033^^H||^PRN^CP^^^0427102023|^WPN^CP^^^0427102023|||||
PV1|1|O|Surg
OP|||1234214^Jones^Steve^^^^NWMI.SynapseRIS|239654^Smith^James^^^^NWMI.Syn
apseRIS||Surgical||||||10458^^NWMI.SynapseRIS|||||||
ORC|RE||1726^NWMI^NWMI.SynapseRIS^L|10458^NWMI^NWMI.SynapseRIS^L|CM|||||2396
54^Smith^James^^^^NWMI.SynapseRIS|NWMI^^Northwest Medical Imaging|||||||
OBR|1|1^PLACER Order No^12345^L|1726^NWMI^NWMI.SynapseRIS^L|CAPC^Abdomen /
Pelvis
+(IV)CCT^NWMI.SynapseRIS|||20151023121828+1000||||||239654^Smith^James^^^^
^NWMI.SynapseRIS|||||20151023121828+1000||RAD|P||^20151023121828+1000^R|||
||8003611566666859&GRIGNON&ADRIAN&&&&NWMI.SynapseRIS&AUSHIC|||112233&Marks&Be
ttie&&&&NWMI.SynapseRIS|||||||
OBX|1|ED|PDF^Display format in
PDF^AUSPDI|^application^pdf^Base64^JVBERi0xLjQKMSAwIG9iago8PA.....P|||201
11213112042+1000||1234214^Jones^Steve^^^^NWMI.SynapseRIS|Z
```

Only the following segments are used by HIPS, the rest are ignored:

Segment	Description	Required/ optional	Cardinality
MSH	Message Header	R	1..1
PID	Patient Identification	R	1..1
PV1	Patient Visit	O	0..1
ORC	Common Order	R	1..*
OBR	Observation Request	R	1..*
OBX	Observation Results	R	1..*

2.2.1 MSH Mappings

```
MSH|^~\&|SYNAPSE RIS|ROYAL CHAMONIX HOSPITAL^RCH^L|SynapsePACS|Northwest
Medical
Imaging^NMMI.SynapseRIS^L|20151023121828+1000||ORU^R01^ORU_R01|201112141218288
74|P|2.4^AUS|||AL|NE|AUS|8859/1|EN^^ISO|
```

The following table describes the MSH segment from the sample message above. The fields in yellow highlight the values stored by HIPS.

Field	Description	Example Value	HIPS Database Location
1	Field Separator	MSH	
2	Encoding Characters	^~\&	
3	Sending Application	SYNAPSE RIS	HL7MessageLog.SendingApplication
4	Sending Facility	RCH	HL7MessageLog.SendingFacility
5	Receiving Application	HIPS	
6	Receiving Facility	RCH	
7	Date/Time Of Message	20151023121828+1000	HL7MessageLog.DateTimeOfMessage
8	Security		
9	Message Type	ORU^R01^ORU_R01	
10	Message Control ID	20111214121828874	HL7MessageLog.MessageControlId
11	Processing ID	P	
12	Version ID	2.4	
13	Sequence Number		
14	Continuation Pointer		
15	Accept Acknowledgment Type		
16	Application Acknowledgment Type		
17	Country Code	AUS	
18	Character Set	8859/1	
19	Principal Language Of Message		
20	Alternate Character Set Handling Scheme		

2.2.2 PID Mappings

```
PID|||756764^^^NMMI^MR~000123456^^^RCH^MR~2951051141^^^AUSHIC^MC||FARMER^HAROL
D^^^Mr^^L^A||19911219|M||4^Neither Aboriginal or TSI^ISAAC^4^Not Aborig or
TSI^MPH|4 North Street^^MARY
SPRINGS^VIC^3033^^H||^PRN^CP^^^^0427102023|^WPN^CP^^^^0427102023|||||
```

Field	Description	Example Value	HIPS Database Locations
1	Set ID - PID		
2	Patient ID		PatientMaster.StatePatientId
3	Patient Identifier List	756764^^^NWMI^MR~00 0123456^^^RCH^MR~295 1051141^^^AUSHIC^MC	HospitalPatient.Mrn HospitalCode.Code PatientMaster.MedicareNumber PatientMaster.MedicareIrn PatientMaster.DvaNumber Note: If PID contain multiple Patient Identifiers the internal patient Identifier "PI" is used as primary and the MRN "MR" is used as the secondary identifier and mapped to the requesting hospital MRN in the CDA document
4	Alternate Patient ID - PID		
5	Patient Name	FARMER^HAROLD^^^Mr^ ^L^A	PatientMasterName.FamilyName PatientMasterName.GivenNames Title.Code Note: Name Type Identifier of Legal Name "L" is required. Any middle names contained in component 3 will be appended to the PatientMasterName.GivenNames field.
6	Mother's Maiden Name		
7	Date/Time Of Birth	19911219	PatientMaster.DateOfBirth
8	Sex	M	PatientMaster.CurrentSexId (M,F,O,U) → (1,2,3,-1) Note: Not based on Sex.Code
9	Patient Alias		
10	Race	4^Neither Aboriginal or TSI^ISAAC ^4^Not Aborig or TSI^MPH	
11	Patient Address	4 North Street^^MARY SPRINGS^VIC^3033^^H	Address.AddressLine1 Address.AddressLine2 Address.PlaceName Address.AustralianStateId Address.PostCode Address.CountryId Address.AddressTypeId
12	County Code		
13	Phone Number - Home	^PRN^CP^^^042710202 3	Contact.ContactMethodId Contact.Detail

Field	Description	Example Value	HIPS Database Locations
14	Phone Number - Business	^WPN^CP^^^^0427102023	Contact.ContactMethodId Contact.Detail
15	Primary Language		
16	Marital Status		
17	Religion		
18	Patient Account Number		
19	SSN Number - Patient		
20	Driver's License Number - Patient		
21	Mother's Identifier		
22	Ethnic Group		
23	Birth Place		
24	Multiple Birth Indicator		
25	Birth Order		
26	Citizenship		
27	Veterans Military Status		
28	Nationality		
29	Patient Death Date and Time		
30	Patient Death Indicator		

2.2.2.1 Patient Identifier List Structure

2.4: CX extended composite ID with check digit					
Component	Description	Value (1)	Value (2)	Value (3)	Value(4)
1	ID	000123456	50001234561	SX12345	123456
2	check digit				
3	code identifying the check digit scheme employed				
4	assigning authority	RCH			NATA2134
5	identifier type code ¹	MR	MC	DVA	PI

¹ MR = Medical Record Number, MC = Medicare Number and IRN, DVA = DVA File Number, PI = Internal Patient Identifier

2.4: CX extended composite ID with check digit

6	assigning facility
---	--------------------

2.2.2.2 Patient Name Structure**2.4: XPN extended person name**

Component	Description	Value
1	family+last name	DYER
2	given name	DARICE
3	middle initial or name	A
4	suffix (e.g., JR or III)	
5	prefix (e.g., DR)	
6	degree (e.g., MD)	
7	name type code	L
8	Name Representation code	

2.2.2.3 Patient Address Structure**2.4: XAD extended address**

Component	Description	Value	Notes
1	street address	954 DAVEY AVE	
2	other designation		
3	city	NEWMAN	
4	state or province	WA	requires a matching code in the hips.State table
5	zip or postal code	6753	
6	country		
7	address type		
8	other geographic designation		
9	county/parish code		
10	census tract		
11	address representation code		

2.2.2.4 Patient Contact Structure

2.4: XTN extended telecommunication number

Component	Description	Value	Notes
1	[(999)] 999-9999 [X999999][C any text]		
2	telecommunication use code	WPN	Must be (WPN PRN NET)
3	telecommunication equipment type (ID)	PH	Must be (PH FX CP)
4	Email address		
5	Country Code		
6	Area/city code		
7	Phone number	0884448333	
8	Extension		
9	any text		

2.2.3 OBR Mappings

```
OBR|1|1^PLACER Order No^12345^L|1726^NWMI^NWMI.SynapseRIS^L|CAPC^Abdomen /
Pelvis
+(IV)CCT^NWMI.SynapseRIS|||20151023121828+1000|||239654^Smith^James^^^^^
^NWMI.SynapseRIS|||20151023121828+1000||RAD|P||^20151023121828+1000^R||
||8003611566666859&GRIGNON&ADRIAN&&&&NWMI.SynapseRIS&AUSHIC||112233&Marks&Be
ttie&&&&NWMI.SynapseRIS|||
```

Field	Description	Example Value	HIPS Database Location
1	Set ID - OBR		
2	Placer Order Number	1^PLACER Order No^12345^L	FillerOrderNumber.OrderIdentifier (only of unique for all OBR segments otherwise will populate with a GUID)
3	Filler Order Number	1726^NWMI^NWMI.SynapseRIS^L	FillerOrder.FillerOrderNumber
4	Universal Service ID	CAPC^Abdomen / Pelvis +(IV)CCT^NWMI.SynapseRIS	
5	Priority		
6	Requested Date/time		
7	Observation Date/Time	20151023121828+1000	
8	Observation End Date/Time		
9	Collection Volume		

Field	Description	Example Value	HIPS Database Location
10	Collector Identifier		
11	Specimen Action Code		
12	Danger Code		
13	Relevant Clinical Info		
14	Specimen Received Date/Time		
15	Specimen Source		
16	Ordering Provider	239654^Smith^James^^^ ^^^NWMI.SynapseRIS	
17	Order Callback Phone Number		
18	Placer field 1		
19	Placer field 2		
20	Filler Field 1	AUSEHR=Y	
21	Filler Field 2		
22	Results Rpt/Status Chng - Date/Time	20050705171802+1000	
23	Charge to Practice		
24	Diagnostic Serv Sect ID RAD		
25	Result Status	P	
26	Parent Result		
27	Quantity/Timing		
28	Result Copies To		
29	Parent		
30	Transportation Mode		
31	Reason for Study		
32	Principal Result Interpreter	8003611566666859&GRIGN ON&ADRIAN&&&&NWMI.S ynapseRIS&AUSHIC	
33	Assistant Result Interpreter		
34	Technician		
35	Transcriptionist		
36	Scheduled Date/Time		

Field	Description	Example Value	HIPS Database Location
37	Number of Sample Containers		
38	Transport Logistics of Collected Sample		
39	Collector's Comment		
40	Transport Arrangement Responsibility		
41	Transport Arranged		
42	Escort Required		
43	Planned Patient Transport Comment		

2.2.4 OBX Mappings

OBX|1|ED|PDF^Display format in
 PDF^AUSPDI||^application^pdf^Base64^JVBERi0xLjQKMSAwIG9iago8PA.....|P||201
 11213112042+1000||1234214^Jones^Steve^^^^NWMI.SynapseRIS|Z

Field	Description	Example Value	HIPS Database Locations
1	Set ID - OBX		
2	Value Type	ED	
3	Observation Identifier	PDF^Display format in PDF^AUSPDI	
4	Observation Sub-ID		
5	Observation Value	^application^PDF^Base64^ JVBERi0xLjQKMSAwIG9iago 8PAovVGI0bGUgKP7/KQovQ 3Jl....	
6	Units		
7	References Range		
8	Abnormal Flags		
9	Probability		
10	Nature of Abnormal Test		
11	Observ Result Status	P	
12	Date Last Obs Normal Values		
13	User Defined Access Checks		

Field	Description	Example Value	HIPS Database Locations
14	Date/Time of the Observation		
15	Producer's ID		
16	Responsible Observer		
17	Observation Method		

3 Low Level Protocol

3.1 Communications

The communication methods with HIPS is via SOAP web services or MLLP through Mirth Connect. The details of the SOAP communication are as follows:

Summary	
Connectivity:	SOAP 1.2 on HTTP 1.1 (optionally on TLS 1.0) MLLP via Mirth Connect
Connection Type:	Single Message (est. by sending system)
End of Segment:	Carriage Return
Character Set:	ASCII

3.2 Character Encoding/Standard

All messages should comply with the printable characters from the ISO 8859/1 character set.

3.3 Message Framing

The message framing convention used will be SOAP Version 1.2. The web service description (WSDL) and XML schemas (XSD) are in the *Message framing WSDL and XML schemas* folder (included in the same zip file as this document).

The "messageForm" parameter should be represented with a CDATA tag. Each HL7 segment will end with a carriage return; the final segment in the message will end with a carriage return, followed by the end of CDATA tag.

Example:

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:pceh="http://nehta.hips/2014/03/pcehr"
xmlns:hips="http://schemas.datacontract.org/2004/07/HIPS.ServiceContracts.Comm
on.Message"
xmlns:hips1="http://schemas.datacontract.org/2004/07/HIPS.ServiceContracts.Pce
hr.Message"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:ns="http://nehta.hips/2014/03">
  <soap:Header/>
  <soap:Body>
    <pceh:UploadOrRemoveImaging>
      <hips:User xsi:type="ns:LocalUser">
        <ns:Domain>CHAMONIX</ns:Domain>
        <ns:FamilyName>Test</ns:FamilyName>
        <ns:GivenNames>Hips</ns:GivenNames>
        <ns:Login>test.hips</ns:Login>
      </hips:User>
      <!--Optional:-->
      <hips1:HL7Message><![CDATA[MSH|^~\&|SYNAPSE RIS|ROYAL CHAMONIX
HOSPITAL^RCH^L|SynapsePACS|Northwest Medical
Imaging^NWMI.SynapseRIS^L|20151023121828+1000||ORU^R01^ORU_R01|201112141218288
74|P|2.4^AUS|||AL|NE|AUS|ASCII|EN^^ISO|
```

```

PID|||756764^^^NWMI^MR~000123456^^^RCH^MR~2951051141^^^AUSHIC^MC||FARMER^HAROLD^^^Mr^L^A||19911219|M|||4 North Street^^MARY
SPRINGS^VIC^3033^^H||^PRN^CP^^^^0427102023|^WPN^CP^^^^0427102023|||||
PV1|1|O|Surg
OP||||1234214^Jones^Steve^^^^NWMI.SynapseRIS|239654^Smith^James^^^^NWMI.SynapseRIS||Surgical|||||||10458^^NWMI.SynapseRIS|||||||
ORC|RE||1726^NWMI^NWMI.SynapseRIS^L|10458^NWMI^NWMI.SynapseRIS^L|CM|||||239654^Smith^James^^^^NWMI.SynapseRIS|NWMI^^Northwest Medical Imaging|||||
OBR|1||1726^NWMI^NWMI.SynapseRIS^L|CAPC^Abdomen / Pelvis
+(IV)CCT^NWMI.SynapseRIS|||20151023121828+1000|||||239654^Smith^James^^^^NWMI.SynapseRIS|||||20151023121828+1000||RAD|P||^20151023121828+1000^R|||
||8003611566666859&GRIGNON&ADRIAN&&&&NWMI.SynapseRIS&AUSHIC|||112233&Marks&Bettie&&&&NWMI.SynapseRIS|||||
OBX|1|ED|PDF^Display format in
PDF^AUSPDI|^application^pdf^Base64^JVBERi0xLjQKMSAwIG9iago8PA.....|||||P|||2011213112042+1000||1234214^Jones^Steve^^^^NWMI.SynapseRIS|Z^]]]></hips1:HL7Message>
    </pceh:UploadOrRemoveImaging>
  </soap:Body>
</soap:Envelope>

```

4 Application Level Protocol

4.1 Message Definitions

Below is a list of the message segments that may be included in the HL7 message. Some of these segments have not been standardised. Consult the source system documentation to determine the segment detail.

Please note:

- Those segments with an "R/O" (Required/Optional) value of "R" are always sent.
- The segments which are optional in HL7 and will NOT be sent have been deleted from the listing.
- Any application that interfaces to this profile must support the receipt of any valid HL7 segment that can be sent in the HL7 message. Receiving and ignoring segments that are not applicable to the application is the expected approach.
- Grey segments are accepted but ignored by HIPS.

4.1.1 ORU – R01 Diagnostic Imaging Result Message

Segment	Name	R/O	Freq. of Occurrence
MSH	Message Header	R	1
EVN	Event	O	1
PID	Patient Identification	R	1
NK1	Next of Kin	O	Multiple
PV1	Patient Visit	R	1
PV2	Patient Visit – Additional	O	1
ORC	Common Order	R	Multiple
OBR	Observation request	R	Multiple
OBX	Observation results	R	Multiple for each OBR

4.2 Segment Definition Notes

The format for the standardised message segments is defined in the tables below.

Please note:

- Shaded fields are not used by HIPS.
- Literal values for specific fields are enclosed in quotes (e.g. "2.4").
- Those fields with an "R/O" value of "R" are always sent.
- Those fields with an "R/O" value "R*" or "O*" are a deviation from the HL7 2.4 standard with respect to optionality.

- Field lengths (for each repetition) are assumed to be as per HL7 2.4 standard unless otherwise noted in the 'Format/Ref/Notes' column.
- Please read section 5.4 regarding the use of the CE data type and non-standardised values prior to reading the segment definitions.

4.3 Common Segment Definitions

4.3.1 MSH – Message Header

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref/Notes
1	00001	Field Separator	R		ST	" "
2	00002	Encoding Characters	R		ST	"^~\&"
3	00003	Sending Application	R*		HD	Enterprise Standard Table 'Application Codes' HIPS stores this in HL7MessageLog.SendingApplication
4	00004	Sending Facility	R*		HD	Enterprise Standard Table 'Facility Codes' HIPS stores this in HL7MessageLog.SendingFacility This value is not used to determine which hospital for the episode. Rather the assigning authority of the MRN (in PID-3) is used.
5	00005	Receiving Application	R*		HD	Enterprise Standard Table 'Application Codes'
6	00006	Receiving Facility	R*		HD	Enterprise Standard Table 'Facility Codes'
7	00007	Message date/time stamp	O		TS	See section 5.2 – Date set to 14 characters HIPS stores this in HL7MessageLog.DateTimeOfMessage
8	00008	Security	O		ST	Not Populated
9	00009	Message type	R		MSG	MessageType^Event type^messagestructure MessageType^Event type is ORU^R01 for Diagnostic Imaging Results Message
10	00010	Message Control ID	R		ST	HIPS will store this in HL7MessageLog.MessageControlId.
11	00011	Processing ID	R		ID	HL7 v2.4 Table 0103 ProcessID, "P", "D", "T"
12	00012	Version ID	R		VID	"2.4"

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref/Notes
13	00013	Sequence Number	O		NM	Not populated
14	00014	Continuation Pointer	O			
15	00015	Accept Acknowledge Type	O		ID	HL7 v2.4 Table 0155 "AL"
16	00016	Application Acknowledge Type	O		ID	HL7 v2.4 Table 0155 "NE"
17	00017	Country Code	O		ID	"AU"
18	00692	Character set	O		ID	HL7 v2.4 Table 0211 "8859/1"
19	00693	Principal language of msg	O		CE	"EN"
20	01317	Alternate Character Set Handling Scheme	O		ID	

4.3.2 PID – Patient Identification Segment

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref/Notes
1	00104	Set ID – Patient ID	O		SI	Not used
2	00105	Patient ID (External ID)	O*		CX	<ID> ^<CheckDigit> ^<Check Digit Code> ^<Assigning Authority> ^<Code Type> ^<Assigning Facility>

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref/Notes
3	00106	Patient Identifier List (Internal Id)	R	Y	CX	<p><ID>^<CheckDigit>^<Check Digit Code>^<Assigning Authority>^<Code Type>^<Assigning Facility></p> <p>HIPS looks in this field for the patient's MRN at the facility for which this message is relevant. HIPS also looks for the DVA card number and Medicare card number in this field.</p> <p>Values as per Enterprise Standard Table 'PID List'.</p>
4	00107	Alternate Patient ID	O		CX	not used.
5	00108	Patient Name	R		XPN	<p>Surname^GivenName^MiddleName^suffix^prefix^degree^NameTypeCode^NameRepresentationCode</p> <p>Name Type as per HL7 table 0200, but shall always be L (Legal) for PID-5.</p> <p>Name representation code as per HL7 table 4000.</p> <p>Note: This field has been defined with a length of 120 characters which is a deviation from the HL7 standard of 48 characters. HIPS will store a maximum 80 characters for each of Surname and GivenNames (formed by combining GivenName and MiddleName components).</p> <p>HIPS stores this name in PatientMasterName with NameTypeId 2 (Current Name in PAS), and keeps previous values by changing their NameTypeId to 3 (Previous/Other Names).</p> <p>The name that the IHI is obtained with is also stored into PatientMasterIhi fields RegisteredFamilyName and RegisteredGivenNames.</p>
6	00109	Mothers Maiden Name	O		XPN	
7	00110	Patient Date of Birth	R*		TS	See section 5.2.

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref/Notes																				
8	00111	Patient Gender	R*		IS	Enterprise Standard Table 'Gender'. HIPS maps this to AS 5017-2006 Health Care Client Identifier Sex using the table below: <table><tr><th>Code</th><th>Description</th><th>SexId</th><th>Description</th></tr><tr><td>M</td><td>Male</td><td>1</td><td>Male</td></tr><tr><td>F</td><td>Female</td><td>2</td><td>Female</td></tr><tr><td>O</td><td>Other</td><td>3</td><td>Intersex or Indeterminate</td></tr><tr><td>U</td><td>Unknown</td><td>-1</td><td>Not Stated/Inadequately Described</td></tr></table> <p>HIPS stores this in PatientMaster.CurrentSexId and uses the patient sex from this field for Medicare IHI searching. Where successful, then stored in PatientMasterIhi.RegisteredSexId.</p>	Code	Description	SexId	Description	M	Male	1	Male	F	Female	2	Female	O	Other	3	Intersex or Indeterminate	U	Unknown	-1	Not Stated/Inadequately Described
Code	Description	SexId	Description																							
M	Male	1	Male																							
F	Female	2	Female																							
O	Other	3	Intersex or Indeterminate																							
U	Unknown	-1	Not Stated/Inadequately Described																							
9	00112	Patient Alias	O	Y	XPN	Not used by HIPS.																				
10	00113	Race	O		CE	HIPS maps to CDA Subject Of Care, Indigenous Status																				

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref/Notes																						
11	00114	Patient Address	R*	Y	XAD	<div>Structure is as per HL7 2.4 Data Structure. Typically contains: AddressLine1^Address Line2^Suburb^state^Postcode^country^type Country is optionally populated. Stored in Address table and linked via PatientMasterAddress. Type is as per corporate address type code set:</div> <table><tr><th>Code</th><th>Description</th></tr><tr><td>H</td><td>Home</td></tr><tr><td>WP</td><td>Business</td></tr><tr><td>TMP</td><td>Temporary</td></tr><tr><td>M</td><td>Mailing</td></tr><tr><td>B</td><td>Business</td></tr><tr><td>C</td><td>Temporary</td></tr><tr><td>L</td><td>Financial</td></tr><tr><td>F</td><td>Financial</td></tr><tr><td>R</td><td>Residential</td></tr><tr><td>U</td><td>Unknown</td></tr></table>	Code	Description	H	Home	WP	Business	TMP	Temporary	M	Mailing	B	Business	C	Temporary	L	Financial	F	Financial	R	Residential	U	Unknown
Code	Description																											
H	Home																											
WP	Business																											
TMP	Temporary																											
M	Mailing																											
B	Business																											
C	Temporary																											
L	Financial																											
F	Financial																											
R	Residential																											
U	Unknown																											
Note variations to HL7 2.4																												
12	00115	County Code	O																									
13	00116	Phone Number (Home)	O	Y	XTN	<div>See section 5.1. Stored in Contact table and linked via PatientMasterContact.</div>																						
14	00117	Phone Number (Business)	O	Y	XTN	<div>See section 5.1. Stored in Contact table and linked via PatientMasterContact.</div>																						

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref/Notes
15	00118	Primary Language	O		CE	<id>^<desc>^<codingsystem>^<alt id>^<alt desc>^<alt coding> Enterprise Standard Table 'Primary Language' Not used by HIPS.
16	00119	Marital Status	O		CE	<id>^<desc>^<codingsystem>^<alt id>^<alt desc>^<alt coding> Enterprise Standard Table 'Marital Status' Not used by HIPS.
17	00120	Religion	O		CE	<id>^<desc>^<codingsystem>^<alt id>^<alt desc>^<alt coding> Enterprise Standard Table 'Religion' Not used by HIPS.
18	00121	Patient Account No.	O		CX	Not used by HIPS.
19	00122	SSN No. – Patient	O		CE	Not used by HIPS HIPS will look in PID-3 for Medicare number instead.
20	00123	Drivers Lic. No – Patient	O			
21	00124	Mother's Identifier	O		CX	Not used by HIPS
22	00125	Ethnic Group	O		CE	Not used by HIPS
23	00126	Birth Place	O		CE	Not used by HIPS.
24	00127	Multiple Birth Indicator	O		ID	Not used by HIPS
25	00128	Birth Order	O		NM	Not used by HIPS
26	00129	Citizenship	O			
27	00130	Veteran's Military Status	O		CE	Not used by HIPS
28	00739	Nationality	O			
29	00740	Patient Death Date/time	O		TS	See section 5.2.

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref/Notes
30	00741	Patient Death Indicator	O		ID	Not used by HIPS.

4.3.3 OBR – Observation Request

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref./Notes
1	00237	Set ID - OBR	C		SI	
2	00216	Placer Order Number	C		EI	CDA Requester Order Identifier
3	00217	Filler Order Number	C		EI	CDA Accession Identifier
4	00238	Universal Service ID	R		CE	CDA Examination Procedure and Examination Result Name First 3 components as Test Result Name, second 3 components as Translation as test result name.
5	00239	Priority	B		ID	
6	00240	Requested Date/time	B		TS	
7	00241	Observation Date/Time	C		TS	CDA Image Date Time and Observation Date Time
8	00242	Observation End Date/Time	O		TS	
9	00243	Collection Volume	O		CQ	
10	00244	Collector Identifier	O	Y	XCN	
11	00245	Specimen Action Code	O		ID	
12	00246	Danger Code	O		CE	
13	00247	Relevant Clinical Info	O		ST	
14	00248	Specimen Received Date/Time *	C		TS	

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref./Notes
15	00249	Specimen Source * 0070	O		CM	
16	00226	Ordering Provider	O	Y	XCN	CDA Requester.
17	00250	Order Callback Phone Number	O	Y/2	XTN	
18	00251	Placer field 1	O		ST	
19	00252	Placer field 2	O		ST	
20	00253	Filler Field 1	O		ST	Used for existence of My Health Record, HIPS uses this field to determine if a 'DoesPCEHRExist' operation is required, and standing consent has been met.
21	00254	Filler Field 2	O		ST	
22	00255	Results Rpt/Status Chng - Date/Time	C		TS	HIPS determines latest value for CDA Overall Report Date Time
23	00256	Charge to Practice	O		CM	
24	00257	Diagnostic Serv Sect ID	O		ID	CDA Modality
25	00258	Result Status 0123	C		ID	HIPS determines if the document should be removed or uploaded. Used in CDA as Report Final Result Status and Test Result Status
26	00259	Parent Result	O		CM	
27	00221	Quantity/Timing	O	Y	TQ	
28	00260	Result Copies To	O	Y/5	XCN	
29	00261	Parent	O		CM	
30	00262	Transportation Mode	O		ID	
31	00263	Reason for Study	O	Y	CE	
32	00264	Principal Result Interpreter	O		CM	CDA Document Author and Responsible Provider
33	00265	Assistant Result Interpreter	O	Y	CM	

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref./Notes
34	00266	Technician	O	Y	CM	
35	00267	Transcriptionist	O	Y	CM	
36	00268	Scheduled Date/Time	O		TS	
37	01028	Number of Sample Containers	O		NM	
38	01029	Transport Logistics of Collected Sample	O	Y	CE	
39	01030	Collector's Comment	O	Y	CE	
40	01031	Transport Arrangement Responsibility	O		CE	
41	01032	Transport Arranged	O		ID	
42	01033	Escort Required	O		ID	
43	01034	Planned Patient Transport Comment	O	Y	CE	

4.3.4 OBX – Observational Results

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref.
1	00569	Set ID - OBX	O		SI	
2	00570	Value Type	C		ID	HIPS determines if the pathology report is embedded as Base64 string (ED) or to be read from a pre-configured location (RP). The pre-configured location is set in the web.config of the HIPS application server.
3	00571	Observation Identifier	R		CE	
4	00572	Observation Sub-ID	C		ST	

Seq#	Item#	Name	R/O	RP/#	DT	Format/Ref.
5	00573	Observation Value	C	Y [May repeat for multipart, single answer results with appropriate data types, e.g., CE, TX, and FT data types.]	*	Based on value in OBX-2 Field Type, HIPS obtains the report from OBR-5.5 (Base64 string) or OBR-5.1 (file name)
6	00574	Units	O		CE	
7	00575	References Range	O		ST	
8	00576	Abnormal Flags	O	Y/5	ID	
9	00577	Probability	O		NM	
10	00578	Nature of Abnormal Test	O	Y	ID	
11	00579	Observ Result Status	R		ID	
12	00580	Date Last Obs Normal Values	O		TS	
13	00581	User Defined Access Checks	O		ST	
14	00582	Date/Time of the Observation	O		TS	
15	00583	Producer's ID	O		CE	
16	00584	Responsible Observer	O		XCN	
17	00936	Observation Method	O	Y	CE	

5 Data Type Definitions

This section details the specific implementation details for certain data types in use. Whenever the data type is referenced, the format here is followed. This section provides a more comprehensive view of the data types.

5.1 XTN Data Type

The XTN data type utilises the extended format as described in the following table. The following table describes the values in use when populated.

Field	Component Name	Data Sub Type	Format
1	Number	ST*	if supplied, should be same as component 7.
2	Use Code	ID	HL7 table 0201
3	Equipment Type	ID	HL7 table 0202
4	Email address	ST	
5	Country Code	ST*	International dialling country code
6	Area Code	ST*	area (STD) code
7	Phone Number	ST*	contains local portion of phone number, or full mobile (04xxxxxxx).
8	Extension	ST*	
9	Additional text	ST	

* Variance to HL7 v2.4 which uses NM for these component types. Some systems may allow qualifiers to be supplied. e.g. 82231111(SIL) to denote number belongs to patient's sister-in-law.

Examples:

- email address: ^NET^Internet^zz@litlepond.net.au
- mobile number: 0414124124^PRN^CP^^^61^0414124124
- home phone: 83321234^PRN^PH^^^08^83321234

5.2 TS Data Type

The TS data type contains two components, as described in the following table. The precision component is optional.

Field	Component Name	Data Sub Type	Format
1	Time	ST	YYYY[MM[DD[hhmm[SS[.S[S[S[S]]]]]]]]][+/-ZZZZ]

Field	Component Name	Data Sub Type	Format
2	Precision	ST	"YYYY[MM[DD[hhmm[SS[.S[S[S[S]]]]]]]]][+/-ZZZZ]" down to the level of precision. E.g.: "YYYYMM" would indicate a precision down to the month.

5.3 XCN Data Type

The XCN data type utilises the format defined in the following table. The following table describes the values in use .when present.

Field	Component Name	Data Sub Type	Format
1	ID Number	ST	
2	Last Name	ST	
3	Given Name	ST	
4	Middle initial or name	ST	
5	Suffix	ST	
6	Prefix	ST	
7	Degree	IS	HL7 2.4 Table 360
8	Source Table	IS	This field has not been standardised
9	Assigning Authority	IS	This field has not been standardised
10	Name Type Code	ID	HL7 2.4 Table 200
11	Identifier Check Digit	ST	
12	Check Digit Scheme	ID	This field has not been standardised
13	Identifier Type Code		See section 5.3 (identifier type codes)
14	Assigning Facility		See section 5.3 (identifier type codes)

The following table defines the standardised values for the Identifier Type code and the Assigning Facility. Non-standardised values, including values where the Assigning facility is the site code, will be passed in this field, but have not been standardised.

Identifier Type Code	Assigning Facility	Description
PROVIDER	Sending Facility – As per Standard Enterprise Table 'Facility Codes'	HIC Provider ID. Note: Assigning facility shall be sent as the sending facility (rather than HIC) such that receiving systems can determine which site sent a given provider number.

Identifier Type Code	Assigning Facility	Description
PRESCRIBER	HIC	HIC Prescriber ID
INTERNAL	Sending Facility – As per Standard Enterprise Table 'Facility Codes'	The identifier used internally within the sending facility's system.

5.4 CE Data Type

The CE data type is as per the HL7 2.4 specification. For elements that have been standardised the 'alternate' portion of the CE will generally contain the original source information. Non-standardised values from source systems are expected to be passed in CE fields, particularly in repeating fields and therefore validating the coding system is essential to utilising the standardised values.

The 'alternative' portion of the CE datatype where supplied is for internal reference only and as a general rule should be ignored by receiving systems. Where the alternative value is present it will contain the value prior to transformation to the Enterprise Standard value. This is of use to internal support personnel to debug missing or incorrect transformations.