Message Construction Guide for GP Software Vendors: General Referral Message

File name: General_Referral_Message_Construction_v1_10.pdf
Version: 1.10

Date: 24/06/2015
Status: draft for discussion
Authors: Brian O'Mahony, Gemma Garvan, Orla Doogue, Senthil Nathan, Martin Krim, Vincent Jordan, Siobhan Hanrahan, Nora Geary, Kevin O'Carroll, Marie Lalor,

Version History

Date	Version	Authors	Change
27/08/2010	0.1	Brian O'Mahony	First draft
10/09/2010	0.2	Gemma Garvan	Updated message numbers in section 7.3
23/09/2010	0.3	Orla Doogue, Gemma Garvan, Brian O'Mahony	OBX segment 'Comments/Reason for Referral' separated into two segments, new codes added for these two segments
01/11/2010	0.4	Orla Doogue	Listed the difference between the generic referral (part of specific referrals) and the general referral
03/11/2010	0.5	Brian O'Mahony	OBX for 'Name of parent or guardian' added to Social History segment
21/02/2011	0.6	Brian O'Mahony	Changes to History General and Social History segments, addition of field 'Previous Hospital Attendance' in History General segment, change of names of fields as discussed in section 2.1
23/02/2011	0.7	Orla Doogue	Updated Table 1, 'Difference between General Referral and Generic Referral' to reflect previous two version history changes.
08/06/2011	0.8	Brian	Added 'Preferred Consultant'

		O'Mahony/Orla Doogue	field, section 2.1/2.2
28/06/2011	0.9	Brian O'Mahony	Correction to sample XML fragments in section 6.8, Laboratory Results and 6.9 Radiology Results to allow validation with schema; change to restriction on PID.7 Date of Birth
02/08/2011	1.0	Brian O'Mahony, Vincent Jordan, Gemma Garvan	Section 3 Acknowledgement and Response messages coming back from hospital patient administration system i.PM, Section 4 Receiving Application <MSH.5> is the hospital patient administration system and is populated by Web Service, Sections 4.4 and 6.4 management of <PID.3> and MRNs, Section 6.8 maximum number of laboratory results is 50, Section 6.9 maximum number of radiology results is 10, Table 26 shows changes to codes for priority, Section 8 maximum limit of one hour for receiving ACK message, Section 9, maximum limit of 12 days for receiving Response message
12/08/2011	1.1	Siobhan Hanrahan, Nora Geary	Section 2.2, summary screen for GP referrals discussed in last bullet point, Section 6.3, clarification that Hospital and Specialty are mandatory fields in Referred To Provider segment, Section 6.5, Reason for Referral and History of Present Illness are mandatory segments as per the HIQA report on GP Referrals,
26/08/2011	1.2	Karen Wynne	Clarification in Table 4 of how MSH.5 is populated
02/09/2011	1.3	Kevin O'Carroll	Changes to Sections 2.1 and

			2.3 to align document with the HIQA GP Referral dataset,
03/10/2011	1.4	Brian O'Mahony, Marie Lalor	Change to Sections 4.1 and 6.1 to clarify the length of the field MSH.10 Message Control ID, change to Section 4.5 to clarify the length of the field OBR.2 Placer Order Number,
28/02/2012	1.5	Karen Wynne	Changes to Section 2.1 to clarify field names.
22/03/2012	1.6	Marie Lalor	Correction to "mm Hg" where found to read "mm/Hg"
28/06/2012	1.7	Orla Doogue	Updated the XML samples to correct some minor discrepancies.
07/05/2015	1.8	Karen Wynne	Addendum for Hospital vendors regarding MSH.4 segment
10/06/2015	1.9	Karen Wynne	Update to Addendum for Hospital vendors regarding MSH.6 segment
24/06/2015	1.10	Karen Wynne	Update to Addendum for Hospital vendors regarding MSH.6 segment

Table of Contents

Where major changes exist compared to the generic construction guide these are flagged with a red asterix *

1. Document Aim

This document aims to help GP Software Vendors to construct a general referral message. The message standard and version is the same as used in GP messaging nationally, Health Level Seven version 2.4 with XML encoding. The message type is REF_I12, which was also used for Cancer Referrals and Out of Hours Coop messages. The general referral message will be used in the HSE South Electronic GP General Referral Project.

2. Overview

The general referral message can be used for a wide range of referrals to hospitals and primary care teams. It is not specialty specific and does not include a disease specific segment. Thus it could be used for a referral to a gastroenterologist, a vascular surgeon or a public health nurse. The scope of the Health Information and Quality Authority (HIQA) National Standard for Patient Referral Information dataset is from GPs to outpatients departments only.

2.1 Alignment with HIQA GP Referral Dataset

This general referral message construction guide is aligned with the GP Referral dataset of the Health Information and Quality Authority (HIQA). The changes made to align this document with the HIQA dataset are:

- Addition of a Yes/No field for 'Has the patient previously attended the hospital' in the History General Segment. This field is transmitted in the History General Segment, has the OBX.3 text 'Previous Hospital Attendance' and the code X0057-0.
- Addition of two text fields for 'Preferred Consultant/Healthcare Practitioner', to include family and first names. This maps to PRD.2 in the Provider Data Segment.
- The use of a Provider Data Segment for the Patient's Usual GP, where this differs from the GP referring the patient, is discussed in Section 6.3 below.
- Change of display title only, but not field name:
    - Change 'Reason for referral' to 'Reason for referral/Anticipated outcome';
    - Change 'History of allergies' to 'Allergies/Adverse Medication Events';
    - Change 'History of family member diseases' to 'Relevant Family History';
    - Change 'History of present illness' to 'History of presenting complaints';
- Change of both display title and field name:
    - Change 'Parent or Guardian' to 'Next of Kin'; 'Next of Kin' label to be followed by the text '(name, contact no. & relationship)'

- Change ‘Comments’ to ‘Additional Relevant Information’;

- Laboratory Studies and Radiology Study Reports both map to ‘Relevant tests/investigations’ in the HIQA dataset.
- Past Medical History and Past Surgical History both map to ‘Past medical history’ in the HIQA dataset.
- Information on tobacco and alcohol use maps to ‘Relevant social history’ in the HIQA dataset.
- Vendors should be aware of the following mapping table between names in this document and in the HIQA GP Referral dataset:

General Referral Construction Guide	**HIQA GP Referral Dataset**
Referral Priority	Priority (GP)
Referral Date	Date of referral
Social History	Relevant social history
History of presenting complaint	Symptoms (including history of presenting complaint and interventions to date)
Clinical examination findings	Examination findings
Emergency phone number	Mobile number

Table 1 Mapping of names from Message Construction Guide to HIQA Dataset

2.2 Differences with Generic Message Construction Guide

Because it must stand-alone and is not associated with a disease specific segment, there are important differences between the general referral message and the generic message construction guide.

In particular these differences relate to:

- The inclusion of a third Provider Data Segment (PRD) where the referring doctor is not the patient’s registered or usual doctor. This could occur for example when a locum GP makes the referral or a GP working for an Out of Hours Coop.
- The inclusion of standard clinical examination items where these exist in the patient record e.g. pulse, systolic and diastolic blood pressure, height, weight and body mass index.

- Extra functionality is needed to support the Laboratory Studies and Radiology Study Reports Segments so that the GP can select laboratory results and imaging results to include in the referral.

- Support for managing referrals and for tracking referral and response messages is needed. The option of doing all referrals electronically will greatly increase the volume of referrals from GPs and supports the need for a usable system to monitor acknowledgements and responses to referrals. A summary screen to track all electronic referrals is required, including indications of which referrals have or have not been acknowledged and which have or have not received a response from the hospital.

Having pointed out the differences between a general referral message and the generic message construction guide, many sections of this document are the same as the generic message construction guide. Where major differences exist they are flagged with a red asterix * in the section heading. Minor changes have been made in other sections also.

Below is a table that outlines the specific differences between the general and generic referral:

General Referral	**Generic Referral (part of specific referrals)**
Include a 3rd PRD segment. Details are outlined in the Provider Data Segment.	Only 2 PRD segments used.
Two separate OBX segments should be used for Reason for Referral and Additional Relevant Information, outlined in the History General Segment.	One OBX segment is used in the generic part of the specific referral for Comments Reason for Referral.
Regular clinical examination results should be automatically pulled into the General referral as listed in the Clinical Examinations Segment.	Only relevant exam to the specific referral could be added.
As the General Referral will be used to cover a vast amount of clinical disciplines, the GP or GP vendor system will need to be able to pick relevant lab results for the patient in question.	In specific referrals, certain labs are requested for that referral.
As the General Referral will be used to cover a vast amount of clinical disciplines, the GP or GP	In specific referrals, certain radiology results are requested for that referral.

vendor system will need to be able to pick relevant radiology results for the patient in question.	
Addition of two new fields, 'Previous Hospital Attendance' in History General Section and 'Next of Kin' in Social History Section.	
Titles and field name changes as outlined in section 2.1 in this document.	
Addition of new field 'Preferred Consultant', to include Family and First names.	

Table 2 Difference between General Referral (this document) and Generic Referral

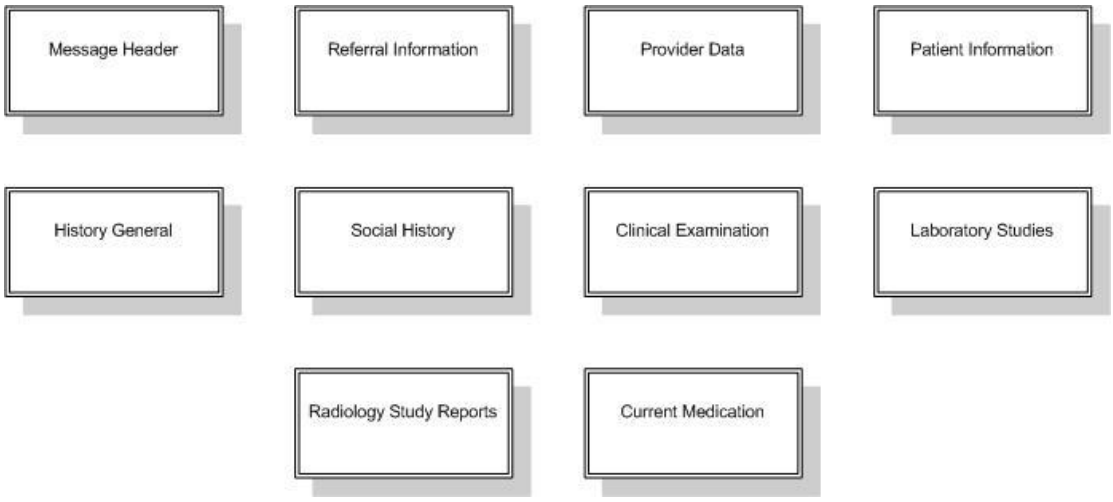

Figure 1 Architecture of General Referral Message

2.3 General Referral Letter Template

Referral To Hospital Address Specialty/Service Consultant/Healthcare Practitioner

Has the patient previously attended the hospital

Referral Information

Referral priority	Referral date

Patient Demographics

Hospital number	Telephone day
Surname	Telephone evening
First name	Mobile
Date of Birth	First language
Gender	
Address	

Registered GP

Surname	Phone number
First name	Mobile number
Medical Council number	Address
Practice name	

Referring Practitioner (if different from above)

Reason for referral/Anticipated outcome

History of presenting complaint

Clinical examination findings

Laboratory investigation results

Radiology investigation results

Past Medical History

Past Surgical History

Relevant Family history

Current Medication

Allergies/Adverse Medication Events

Social History	
History of tobacco use	Wheelchair assistance
History of alcohol use	Interpreter required
Next of Kin	

Additional Relevant Information (including special needs, disabilities, clinical

warnings)

Figure 2 General Referral Letter Template

3. Message Flow

A general referral message is generated by the practice software system. This message is transmitted through Healthlink to the hospital patient administration system, known as i.PM. i.PM acknowledges the referral, sending an ACK message back through Healthlink to the practice software system. The hospital team generates a referral response message. This is acknowledged by the GP system.

GP software vendors should upload single general referral messages, via Web Services, as they are created. Healthlink will deliver acknowledgement messages from i.PM as individual messages in real time back to the vendors; batch mechanism will not be used for inbound messages.

Healthlink will provide an XML style sheet to all parties involved in the referral process. This should be used to display the referral message to the referring GP. It will also be used to display the referral message to the consultant in the hospital. In this way, everyone sees the same thing.

When the referring GP has created the general referral message, the complete message should be displayed, prior to transmission, with the option to edit any of the contained segments. The GP should sign off that he or she is happy with the referral message. A copy of the referral message should be stored. The GP system should have the ability to print off a copy of the electronic referral.

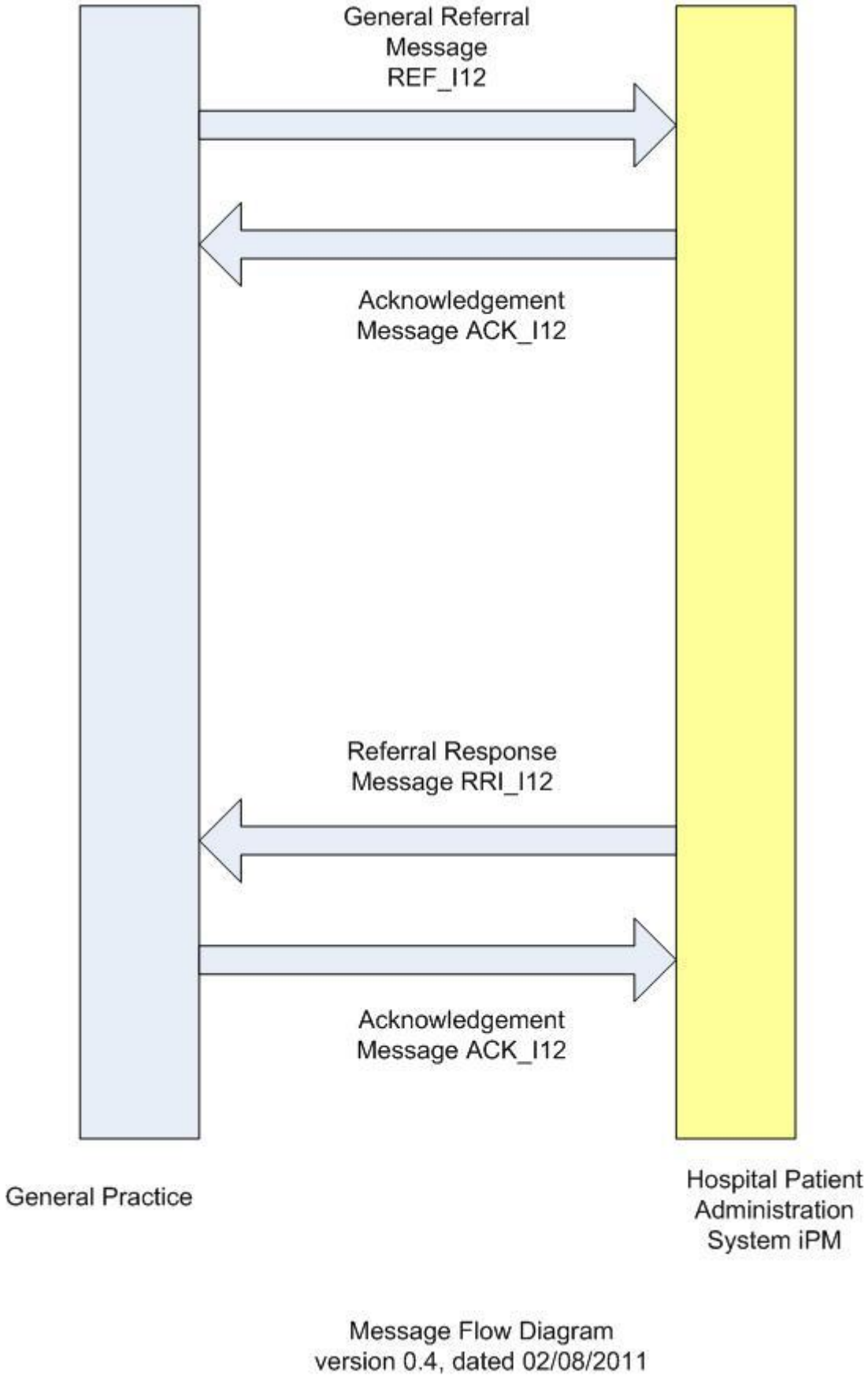

Figure 3 Message Flow Diagram

The referral message should be validated by the GP software system prior to transmission to i.PM via the Healthlink broker. If there is a problem with the referral message, i.PM will return an Application Error or Application Reject code in the acknowledgement message. When this occurs, the GP practice software system should notify the GP that the referral message has not been accepted and that the GP needs to either login to the Healthlink web application and submit the referral there or print off the stored referral and send it manually. Also the GP needs to contact the software support desk to inform them of the problem.

The documents 'A Guide to the Referral Response Message for GP Practice Software Vendors' version 0.7 or higher, and 'Message Construction Guide for GP Software Vendors: acknowledgement message' version 0.5 or higher, available from Healthlink, should be consulted for a discussion on how to handle acknowledgement and referral response messages and how to manage the practice workflow around these messages.

4. HL7 Segments to Consider for REF_I12 message

This section describes the Health Level Seven version 2.4 segments that make up the referral message, REF_I12. Some of the fields can be hard coded, for example MSH.3 Sending Application. Some of the fields consist of extracts of information already held in the practice information system, such as History of Past Illness or Current Medication, and some are populated by the Web Service from Healthlink.

This is the abstract structure of a Referral/Discharge message. This message is used to transmit a general referral message. Segments within { } are repeatable and segments within [ ] are optional. The chapter numbers in the abstract message below relate to the relevant chapters in the HL7 version 2.4 standard. Many of the optional segments below are not described in this document but are defined in detail in the HL7 standard.

REF^I12	**Patient Referral**	**Chapter**
MSH	Message Header	2
[RF1]	Referral Information	11
[		
AUT	Authorization Information	11
[CTD]	Contact Data	11
]		
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	3
[{GT1}]	Guarantor	6
[		
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info -Cert	6
}		
]		
[ACC]	Accident Information	6
[{DG1}]	Diagnosis	6
[{DRG}]	Diagnosis Related Group	6

REF^I12	Patient Referral	Chapter
[{AL1}]	Allergy Information	3
[		
{		
PR1	Procedure	6
[		
AUT	Authorization Information	11
[CTD]	Contact Data	11
	]	
}		
]		
[		
{		
OBR	Observation Request	4
[{NTE}]	Notes and Comments	2
[		
{		
OBX	Observation/Result	7
[{NTE}]	Notes and Comments	2
}		
]		
}		
]		
[		
PV1	Patient Visit	3
[PV2]	Patient Visit Additional Info	3
]		
[		
PV1	Patient Visit	3
[PV2]	Patient Visit Additional Info	3
]		
[{NTE}]	Notes and Comments	2

Table 3 Abstract Message Structure

These are the segments used in this implementation:

REF_I12	Patient Referral	HL7 Chapter
MSH	Message Header	2
RF1	Referral Information	11
PRD	Provider Data	11
PID	Patient Identification	3
OBR	Observation Request	4
OBX	Observation/Result	7
PV1	Patient Visit	3
NTE	Notes and Comments	2

Table 4 Segments in use in this implementation

4.1 Message Header Segment (MSH)

Field	Mand	Value	Comment	HL7
Sending Application	Yes	HELIXPM.HEALTHLINK.20	Made up of name of GP Practice Software System, Healthlink and	<MSH.3>

			Healthlink Message Type, see code tables for possible values	
Sending Facility	Yes		GP's Medical Council Number.	<MSH.4>
Receiving Application	Yes	Populated from the 'DestinationSystem' field of the 'GetAvailableServices' VendorAPI call	The hospital patient administration system	<MSH.5>
Receiving Facility	Yes	Populated via WS, method GetAvailableServices	Hospital receiving the referral	<MSH.6>
Date/time of message	Yes	YYYYMMDDHHMM		<MSH.7>
Message Type	Yes	REF_I12		<MSH.9>
Message Control ID	Yes	REF20081127162054003564	Uniquely identifies the message. The format used to generate the Message Control ID for referral messages is "REF" + date and time in the format YYYYMMDDHHMMSS + GP's 6 digit Medical Council Number. Note the length of this field is 23 characters.	<MSH.10>
Processing ID	Yes	P		<MSH.11>
Version ID	Yes	2.4	HL7 version number	<MSH.12>
Accept ACK Type	Yes	AL	ACK always expected	<MSH.15>

Table 5 Message Header Segment

4.2 Referral Information Segment (RF1)

Field	Mand	Value	Comment	HL7

Referral Status	Yes	P	P for Pending, see code table. Always use P.	<RF1.1>
Referral Priority	^	Populated via WS, code table Referral Priority	^ Please refer to Referral Vendor Implementation Guidelines document to find out the Mandatory requirements	<RF1.2>
Referral Type	Yes	General	Type of referral, see Code Tables below	<RF1.3>
Originating Referral ID	Yes	Varchar(30)	Assigned by practice management system, no requirements as to the format or structure. Returned in Referral Response Message.	<RF1.6>
Referral Date	Yes	YYYYMMDD	Date of referral	<RF1.7>

Table 6 Referral Information Segment

4.3 Provider Data Segment (PRD)

Field	Mand	Value	Comment	HL7
Provider Role	Yes	PP, RT or RP	Primary Care Provider or Referred To Provider or Referring Provider, see Code Tables below	<PRD.1>
Provider Name			Name of the GP making the referral or the patient's registered GP or the preferred consultant receiving the referral. The GP name should always be available, the consultant's may not. 'Preferred Consultant' field should be mapped to this field (2nd PRD Segment).	<PRD.2>
Provider Address	Yes	Four lines, each line Varchar(30)	Practice or Hospital Address, first two lines are mandatory.	<PRD.3>

Provider Location	Yes	GP Practice or Hospital Specialty or Service	Used to identify the general practice, hospital department, directorate, specialty, clinic or service	<PRD.4>
Provider Communication Info	Yes	Varchar(50)	Repeatable datatype for phone numbers, email address; see Code Tables below	<PRD.5>
Provider identifier	Yes	Doctor's medical council number	Mandatory when PRD.1 is Primary Care Provider or Referring Provider	<PRD.7>

Table 7 Provider Data Segment

4.4 Patient Identification Segment (PID)

Field	Mand	Value	Comment	HL7
Patient Identifier	No		Hospital MRN, if available in the practice software system	<PID.3>
Patient Name	Yes	Varchar(50)	Family name, first name, middle name or initial, title	<PID.5>
Date of Birth	Yes	YYYYMMDD	Min: 19000101 Max: current date	<PID.7>
Gender	Yes	F, M	F for female, M for male	<PID.8>
Address	Yes	Four lines, each line Varchar(30)	Four lines, first two are mandatory	<PID.11>
Phone number	Yes	Varchar(20)	Use this for a home or business or mobile number or email or all four, at least one phone number is required, see Code Tables below	<PID.13>
First language	Yes	Download the table from the Internet	Uses ISO table 639	<PID.15>

Table 8 Patient Identification Segment

4.5 Observation Request Segment (OBR)

Field	Mand	Value	Comment	HL7
Set ID	Yes	Numeric	Starts at 1 and incrementally increases, order is not significant	<OBR.1>
Placer Order Number	Yes	REF2008112716 2054003564	Referral Control Number, same as <MSH.10> Message Control ID. The number of characters allowed for this field is 427.	<OBR.2>
Universal Service Identifier	Yes	LOINC code and name for observation request	See table, e.g. LOINC code for Social History segment is 29762-2,	<OBR.4>
Observation time	Y	YYYYMMDD	Date of the observation	<OBR.7>

Table 9 Observation Request Segment

4.6 Observation Result Segment (OBX)

Field	Mand	Value	Comment	HL7
Set ID	Yes	Numeric	Starts at 1 and incrementally increases, order is not significant	<OBX.1>
Value type	Yes	FT for formatted text/NM for Numeric		<OBX.2>
Observation identifier	Yes	LOINC code and name for observation result. Local code where LOINC not available	See table, e.g. LOINC code for History of past illness is 11348-0	<OBX.3>
Observation value	Yes		The value of the observation	<OBX.5>
Observation units		Units relevant to result		<OBX.6>

Reference range		Reference range of result		<OBX.7>
Abnormal flag		Abnormal flag value		<OBX.8>
Observation result status	Yes	F	F for final	<OBX.11>
Date/time of the observation	Yes	YYYYMMDD	Timestamp	<OBX.14>

Table 10 Observation Result Segment

4.7 Organisation of OBR and OBX Segments

Figure 4 Organisation of OBR segments

4.8 Patient Visit Segment (PV1)

This segment is used to indicate the patient's eligibility and health insurance status and the patient's pregnancy status.

Field	Mand	Value	Comment	HL7
Patient	Yes	The class of the patient in terms		<PV1.2>

Class		of: Inpatient, Outpatient, Emergency, Unknown		
Ambulatory Status	No	Pregnant, Not Pregnant, Unknown	Indicates pregnancy status	<PV1.15>
Financial Class	No	Medical Card, Public, Private, Semiprivate	The Public/Private status of the patient, see Code Tables below	<PV1.20>

Table 11 Patient Visit Segment

5. LOINC Codes

5.1 LOINC Codes for Observation Request Segments (OBR)

Text	LOINC code
Social history	29762-2
History general	11329-0
Laboratory studies	26436-6
Current medication	19009-0
Radiology study reports	18726-0
Physical exam.total	22029-3

Table 12 LOINC codes for OBR segments

5.2 LOINC Codes for Observation Result Segments (OBX)

Text	LOINC code
Reason for referral	42349-1
History of present illness	10164-2
History of family member	10157-6

diseases	
History of alcohol use	11330-8
History of allergies	10155-0
History of tobacco use	11366-2
History of surgical procedures	10167-5
History of past illness	11348-0
Physical mobility impairment	28189-9
Cigarettes Smoked per day	8663-7

Table 13 LOINC codes for OBX segments

5.3 Local Codes for Data Items for which a LOINC Code is not available

Text	**Local code**	**Values**
Interpreter Required	X0006-0	Yes No
Years Smoking	X0007-0	Numeric
Additional Relevant Information	X0055-0	Including special needs, disabilities, clinical warnings
Anticoagulant Use	X0010-0	Yes No
Units of Alcohol per week	X0011-0	Numeric
Next of Kin	X0056-0	Text

Previous Hospital Attendance	X0057-0	Yes No

Table 14 Local codes

6. Message Fragments

6.1 MSH Segment

The first five lines are standard in all REF_I12 messages and show the XML declaration, the XML names space and, in the <MSH.1> and <MSH.2> fields, the legacy field separator and encoding characters used in traditional encoded HL7.

The practice software system, which is the sending application <MSH.3>, is called HELIXPM for Helix Practice Manager. Other software application names include HEALTHONE, SOCRATES, MEDTECH and COMPLETEGP.

The sending facility <MSH.4> is the GP's medical council number. Please fill all three components of this field, <HD.1>, <HD.2> and <HD.3>. The format is GP's family name and first name separated by comma, code, coding system, where L signifies a local coding system.

The receiving application <MSH.5> is the hospital patient administration system, populated by Web Service.

The receiving facility <MSH.6> is the hospital, populated by Web Service.

<MSH.7> is the date/time the REF message was created by the practice software system. The format is YYYYMMDDHHMM.

MSH.9 is the message type.

MSH.10 is the Message Control ID. This uniquely identifies the message and is provided by Healthlink. The format used to generate the Healthlink Message Control ID for referral messages is "REF" + date and time in the format YYYYMMDDHHMMSS + GP's 6 digit medical council number. Using the above format, the length of this field is 23 characters. Information systems working with electronic referrals must be able to accommodate up to 199 characters in this MSH.10 field.

MSH.11 is the Processing ID. P is for production, D is for debugging or testing and T for training. Always use P.

MSH.12 is the HL7 version number, 2.4.

MSH.15 Accept Acknowledgement Type will be AL for always because the system expects to get an acknowledgement back.

```
<?xml version="1.0" encoding="UTF-8"?>
<REF_I12 xmlns="urn:hl7-org:v2xml">
        <MSH>
```

```
        <MSH.1>|</MSH.1>
        <MSH.2>^~\&amp;amp;</MSH.2>
        <MSH.3>
                <HD.1>HELIXPM.HEALTHLINK.XX</HD.1>
                <HD.2/>
                <HD.3/>
        </MSH.3>
        <MSH.4>
                <HD.1>Dr. Smith, John</HD.1>
                <HD.2>3564</HD.2>
                <HD.3>L</HD.3>
        </MSH.4>
        <MSH.5>
                <HD.1>i.PM</HD.1>
                <HD.2/>
                <HD.3/>
        </MSH.5>
        <MSH.6>
                <HD.1>St. James's Hospital</HD.1>
                <HD.2>904.001</HD.2>
                <HD.3>L</HD.3>
        </MSH.6>
        <MSH.7>
                <TS.1>20100401103136</TS.1>
        </MSH.7>
        <MSH.9>
                <MSG.1>REF</MSG.1>
                <MSG.2>I12</MSG.2>
        </MSH.9>
        <MSH.10>REF20100401162054003564</MSH.10>
        <MSH.11>
                <PT.1>P</PT.1>
        </MSH.11>
        <MSH.12>
                <VID.1>2.4</VID.1>
        </MSH.12>
        <MSH.15>AL</MSH.15>
</MSH>
```

6.2 Referral Information Segment

Indicates that this referral is pending, has an urgent priority, is a general referral, has a reference number of 10008 assigned by the practice software system and was generated on 1st April 2010. The Originating Referral ID <RF1.6>, assigned by the practice software system, is returned in the Referral Response Message from the Hospital and can be used to associate a Referral with a Response.

```
<RF1>
        <RF1.1>
```

```
                <CE.1>P</CE.1>
                <CE.2>Pending</CE.2>
                <CE.3>L</CE.3>
            </RF1.1>
            <RF1.2>
                <CE.1>U</CE.1>
                <CE.2>Urgent</CE.2>
                <CE.3>L</CE.3>
            </RF1.2>
            <RF1.3>
                <CE.1>General</CE.1>
                <CE.2>General</CE.2>
                <CE.3>L</CE.3>
            </RF1.3>
            <RF1.6>
                <EI.1>10008</EI.1>
            </RF1.6>
            <RF1.7>
                <TS.1>20100401103136</TS.1>
            </RF1.7>
</RF1>
```

6.3 Provider Data Segment *

In a general referral message it is possible to have three Provider Data Segments, one for the GP referring the patient (Referring Provider), one for the patient's normal or registered GP (Primary Care Provider) and one for the Hospital specialty and consultant (Referred To Provider). In the case where the patient's normal GP is making the referral there will be two PRD segments (Primary Care Provider and Referred To Provider). In the case where a locum or GP Out of Hours service is making the referral there will be three PRD segments. There must always be at least two PRD segments, one for the patient's normal GP and one for the Hospital specialty receiving the referral.

In order for a GP to send an electronic referral from their practice software system they need to be set up as a user with Healthlink and have their digital ID installed on the computer they are using. It is unlikely that locums or out of hours co-ops will fulfil these requirements in the short term. Thus the use of the third PRD segment for the Referring Provider is included to future proof this specification and development work. The use case for it is not in existence at present.

PRD Segment 1	PRD Segment 2	PRD Segment 3	Allowed?
Primary Care Provider (PP)	Referred To Provider (RT)		Yes
Primary Care	Referring	Referred To	Yes

Provider (PP)	Provider (RP)	Provider (RT)	
Referring Provider (RP)	Referred To Provider (RT)		No

Table 15 Allowed Combinations of PRD Segments

PRD.1 is the Provider Role, PP for primary care provider, RP for the GP referring the patient and RT for the referred to provider, the specialty in the hospital or specialist centre.

PRD.4 is an important field when used for the referred to provider. It is used to identify the specialty or service to which the referral is made.

PRD.5 is a repeatable field for phone numbers and email addresses. Use HL7 table 0201 (Table 22 below) to indicate what the value in <XTN.1> refers to. For example work number (WPN), primary residence number (PRN), email address (NET).

PRD.7 is the doctor's medical council number, provided by Healthlink.

Here is the provider data segment for the Primary Care Provider, the patient's normal or registered GP. A provider data segment for the Primary Care Provider is always required:

```
<REF_I12.PROVIDER_CONTACT>
        <PRD>
        <PRD.1>
                <CE.1>PP</CE.1>
                <CE.2>Primary Care Provider</CE.2>
                <CE.3>L</CE.3>
        </PRD.1>
        <PRD.2>
                        <XPN.1>
                                <FN.1>Smith</FN.1>
                        </XPN.1>
                        <XPN.2>Barry</XPN.2>
                        <XPN.5>DR</XPN.5>
                        <XPN.6>MB</XPN.6>
                </PRD.2>
                <PRD.3>
                        <XAD.1>
                                <SAD.1>Smith Practice</SAD.1>
                        </XAD.1>
                        <XAD.2>1 Parnell Square</XAD.2>
                        <XAD.3>Dublin 1</XAD.3>
                        <XAD.4/>
                </PRD.3>
                <PRD.4>
                        <PL.1>Smith Practice</PL.1>
```

```
                </PRD.4>
                <PRD.5>
                        <XTN.1>053 4366066</XTN.1>
                        <XTN.2>WPN</XTN.2>
                </PRD.5>
                <PRD.5>
                        <XTN.1>053 4389066</XTN.1>
                        <XTN.2>EMR</XTN.2>
                </PRD.5>
                <PRD.7>
                        <PI.1>12345</PI.1>
                </PRD.7>
        </PRD>
</REF_I12.PROVIDER_CONTACT>
```

Here is a provider data segment for the Referring Provider, in this example a GP working with CareDoc Out of Hours Coop. A provider data segment for a Referring Provider may or may not be present.

```
<REF_I12.PROVIDER_CONTACT>
        <PRD>
        <PRD.1>
                <CE.1>RP</CE.1>
                <CE.2>Referring Provider</CE.2>
                <CE.3>L</CE.3>
        </PRD.1>
        <PRD.2>
                        <XPN.1>
                                <FN.1>Murphy</FN.1>
                        </XPN.1>
                        <XPN.2>Patrick</XPN.2>
                        <XPN.5>DR</XPN.5>
                        <XPN.6>MB</XPN.6>
                </PRD.2>
                <PRD.3>
                        <XAD.1>
                                <SAD.1>CareDoc Out of Hours</SAD.1>
                        </XAD.1>
                        <XAD.2>St Dympna's Hospital, Athy Road</XAD.2>
                        <XAD.3>Carlow</XAD.3>
                        <XAD.4/>
                </PRD.3>
                <PRD.4>
                        <PL.1>CareDoc Carlow</PL.1>
                </PRD.4>
                <PRD.5>
                        <XTN.1>059 9138199</XTN.1>
                        <XTN.2>WPN</XTN.2>
                </PRD.5>
```

```
                <PRD.5>
                        <XTN.1>1850 334999</XTN.1>
                        <XTN.2>EMR</XTN.2>
                </PRD.5>
                <PRD.7>
                        <PI.1>02223</PI.1>
                </PRD.7>
        </PRD>
</REF_I12.PROVIDER_CONTACT>
```

Here is the provider data segment for the Referred To Provider, in this example, the preferred consultant Dr Thomas McCarthy in the specialty of respiratory medicine in St James's Hospital, Dublin. A provider data segment for the Referred To Provider is always required. The fields PRD.3 (Hospital) and PRD.4 (Specialty) are mandatory and the field PRD.2 (Preferred Consultant) is optional. Please see Table 6 above.

```
<REF_I12.PROVIDER_CONTACT>
        <PRD>
                <PRD.1>
                        <CE.1>RT</CE.1>
                        <CE.2>Referred to Provider</CE.2>
                        <CE.3>L</CE.3>
                </PRD.1>
                <PRD.2>
                        <XPN.1>
                                <FN.1>McCarthy</FN.1>
                        </XPN.1>
                        <XPN.2>Thomas</XPN.2>
                        <XPN.5>DR</XPN.5>
                        <XPN.6>MB</XPN.6>
                </PRD.2>
                <PRD.3>
                        <XAD.1>
                                <SAD.1>St James Hospital</SAD.1>
                        </XAD.1>
                        <XAD.2>James Street</XAD.2>
                        <XAD.3>Dublin 8</XAD.3>
                        <XAD.4/>
                </PRD.3>
                <PRD.4>
                        <PL.1>Respiratory Medicine Unit</PL.1>
                </PRD.4>
                <PRD.5>
                        <XTN.1>01 4103854</XTN.1>
                        <XTN.2>WPN</XTN.2>
                </PRD.5>
                <PRD.7>
                        <PI.1>56789</PI.1>
```

```
            </PRD.7>
        </PRD>
    </REF_I12.PROVIDER_CONTACT>
```

6.4 Patient Identification Segment

The practice software system should send the patient demographics in the referral. If a patient MRN is available in the GP system for the hospital being referred to, then this should be included. The hospital patient administration system will make a match based on first name, surname, date of birth, gender and first line of address.

```
<PID>
        <PID.3>
            <CX.1>Z08483595</CX.1>
            <CX.4>
                <HD.1>CUH</HD.1>
                <HD.2/>
                <HD.3/>
            </CX.4>
            <CX.5>MRN</CX.5>
        </PID.3>
        <PID.5>
            <XPN.1>
                <FN.1>Mouse</FN.1>
            </XPN.1>
            <XPN.2>Michael</XPN.2>
            <XPN.5>Mr</XPN.5>
            <XPN.7>L</XPN.7>
        </PID.5>
        <PID.7>
            <TS.1>19270912</TS.1>
        </PID.7>
        <PID.8>M</PID.8>
        <PID.11>
            <XAD.1>
                <SAD.1>High Lodge</SAD.1>
            </XAD.1>
            <XAD.2>Dungarvan</XAD.2>
            <XAD.3>Co Waterford</XAD.3>
            <XAD.4/>
        </PID.11>
        <PID.13>
            <XTN.1>058 22122</XTN.1>
            <XTN.2>PRN</XTN.2>
        </PID.13>
        <PID.15>
            <CE.1>Eng</CE.1>
            <CE.2>English</CE.2>
            <CE.3>ISO-639</CE.3>
        </PID.15>
```

</PID>

6.5 History General Segments *

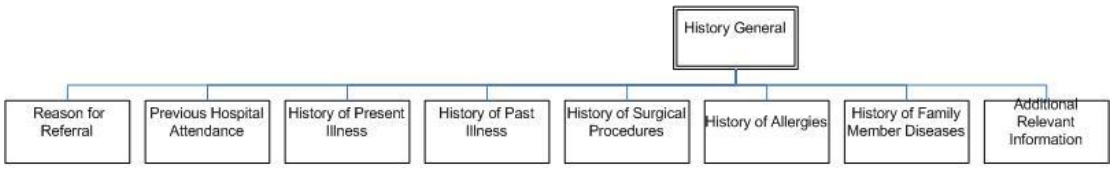

Figure 5 OBX segments for History General OBR

OBX Segment	Mandatory	Value	Comment	Code
Reason for Referral	Yes	Text	Reason for referral/Anticipated outcome	42349-1
Previous Hospital Attendance	No	Yes/No	Has the patient previously attended this hospital?	X0057-0
History of Present Illness	Yes	Text	History of presenting complaints Often taken from current consultation note	10164-2
History of Past Illness	No	Text		11348-0
History of Surgical Procedures	No	Text		10167-5
History of Allergies	No	Text	Allergies/Adverse Medication Events	10155-0
History of Family Member Diseases	No	Text	Relevant family history of diseases	10157-6
Additional Relevant Information	No	Text	Any information that needs to be part of the referral, including special needs, disabilities, clinical	X0055-0

			warnings, patient's issues and social circumstances	

Table 16 OBX segments for History General

The GP software system should pull relevant information from the existing patient record and make this available for review and editing by the referring GP. Where no information is available in the patient record the facility to enter information should be provided. The current consultation note should autopopulate the History of Present Illness and be available for editing.

```
<REF_I12.OBSERVATION>
        <OBR>
            <OBR.1>1</OBR.1>
            <OBR.2>
                <EI.1>REF20100401162054003564</EI.1>
                <EI.2>Referral Control Number</EI.2>
                <EI.3/>
                <EI.4/>
            </OBR.2>
            <OBR.3/>
            <OBR.4>
                <CE.1>11329-0</CE.1>
            <CE.2>History General</CE.2>
                <CE.3>LN</CE.3>
            </OBR.4>
            <OBR.7>
                <TS.1>20100401</TS.1>
        </OBR.7>
            <OBR.25/>
        </OBR>
        <REF_I12.RESULTS_NOTES>
            <OBX>
                <OBX.1>1</OBX.1>
                <OBX.2>FT</OBX.2>
                <OBX.3>
                    <CE.1>42349-1</CE.1>
                <CE.2>Reason for referral</CE.2>
                    <CE.3>LN</CE.3>
                </OBX.3>
<OBX.5> Request for urgent review. I am concerned that this patient has chronic
obstructive pulmonary disease.</OBX.5>
                <OBX.6/>
                <OBX.7/>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14>
                    <TS.1>20100401</TS.1>
```

```
</OBX.14>
                    </OBX>
                </REF_I12.RESULTS_NOTES>
                <REF_I12.RESULTS_NOTES>
                    <OBX>
                        <OBX.1>2</OBX.1>
                        <OBX.2>FT</OBX.2>
                        <OBX.3>
                            <CE.1>X0057-0</CE.1>
                        <CE.2>Previous Hospital Attendance</CE.2>
                            <CE.3>L</CE.3>
                        </OBX.3>
<OBX.5>Yes</OBX.5>
                        <OBX.6/>
                        <OBX.7/>
                        <OBX.8/>
                        <OBX.11>F</OBX.11>
                        <OBX.14>
                            <TS.1>20100401</TS.1>
</OBX.14>
                    </OBX>
                </REF_I12.RESULTS_NOTES>
                <REF_I12.RESULTS_NOTES>
                    <OBX>
                        <OBX.1>3</OBX.1>
                        <OBX.2>FT</OBX.2>
                        <OBX.3>
                            <CE.1>10164-2</CE.1>
                        <CE.2>History of present illness</CE.2>
                            <CE.3>LN</CE.3>
                        </OBX.3>
<OBX.5>Persistent cough with sputum for three months. Increasing dyspnoea on
exertion.</OBX.5>
                        <OBX.6/>
                        <OBX.7/>
                        <OBX.8/>
                        <OBX.11>F</OBX.11>
                        <OBX.14>
                            <TS.1>20100401</TS.1>
</OBX.14>
                    </OBX>
                </REF_I12.RESULTS_NOTES>
                <REF_I12.RESULTS_NOTES>
                    <OBX>
                        <OBX.1>4</OBX.1>
                        <OBX.2>FT</OBX.2>
                        <OBX.3>
                            <CE.1>11348-0</CE.1>
                            <CE.2>History of past illness</CE.2>
                        <CE.3>LN</CE.3>
```

```
                        </OBX.3>
<OBX.5>Diabetes since 2004, controlled by diet alone.</OBX.5>
                        <OBX.6/>
                        <OBX.7/>
                        <OBX.8/>
                        <OBX.11>F</OBX.11>
                        <OBX.14>
                            <TS.1>20100401</TS.1>
</OBX.14>
                    </OBX>
                </REF_I12.RESULTS_NOTES>
                <REF_I12.RESULTS_NOTES>
                    <OBX>
                        <OBX.1>5</OBX.1>
                        <OBX.2>FT</OBX.2>
                        <OBX.3>
                            <CE.1>10167-5</CE.1>
                            <CE.2>History of surgical procedures</CE.2>
                        <CE.3>LN</CE.3>
                        </OBX.3>
<OBX.5>Cholecystectomy, laparoscopic, 2005.</OBX.5>
                        <OBX.6/>
                        <OBX.7/>
                        <OBX.8/>
                        <OBX.11>F</OBX.11>
                        <OBX.14>
                            <TS.1>20100401</TS.1>
</OBX.14>
                    </OBX>
                </REF_I12.RESULTS_NOTES>
                <REF_I12.RESULTS_NOTES>
                    <OBX>
                        <OBX.1>6</OBX.1>
                        <OBX.2>FT</OBX.2>
                        <OBX.3>
                            <CE.1>10155-0</CE.1>
                        <CE.2>History of allergies</CE.2>
                            <CE.3>LN</CE.3>
                        </OBX.3>
<OBX.5>Allergic to penicillin - urticaria and wheeze</OBX.5>
                        <OBX.6/>
                        <OBX.7/>
                        <OBX.8/>
                        <OBX.11>F</OBX.11>
                        <OBX.14>
                            <TS.1>20100401</TS.1></OBX.14>
                    </OBX>
                </REF_I12.RESULTS_NOTES>
                <REF_I12.RESULTS_NOTES>
                    <OBX>
```

```
                        <OBX.1>7</OBX.1>
                        <OBX.2>FT</OBX.2>
                        <OBX.3>
                            <CE.1>10157-6</CE.1>
<CE.2>History of family member diseases</CE.2>
                        <CE.3>LN</CE.3>
                        </OBX.3>
<OBX.5>Father died colorectal cancer, age 70 years</OBX.5>
                        <OBX.6/>
                        <OBX.7/>
                        <OBX.8/>
                        <OBX.11>F</OBX.11>
                        <OBX.14>
                            <TS.1>20100401</TS.1></OBX.14>
                    </OBX>
                </REF_I12.RESULTS_NOTES>
                <REF_I12.RESULTS_NOTES>
                    <OBX>
                        <OBX.1>8</OBX.1>
                        <OBX.2>FT</OBX.2>
                        <OBX.3>
                            <CE.1>X0055-0</CE.1>
                            <CE.2>Additional Relevant
Information</CE.2>
                            <CE.3>L</CE.3>
                    </OBX.3>
<OBX.5>Poor housing conditions, damp.</OBX.5>
                        <OBX.6/>
                        <OBX.7/>
                        <OBX.8/>
                        <OBX.11>F</OBX.11>
                        <OBX.14>
                            <TS.1>20100401</TS.1>
</OBX.14>
                    </OBX>
                </REF_I12.RESULTS_NOTES>
            </REF_I12.OBSERVATION>
```

6.6 Social History Segments *

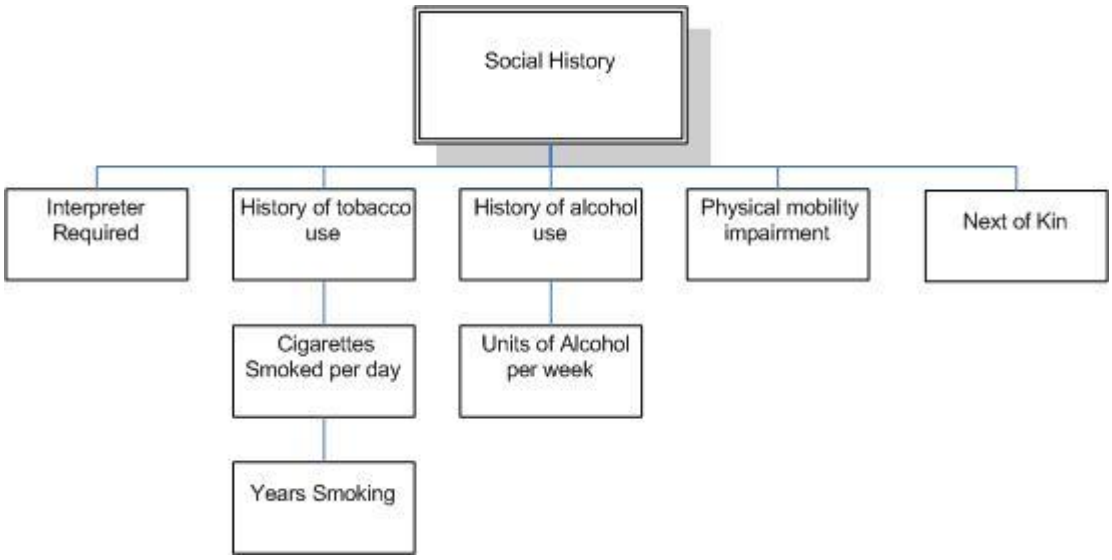

Figure 6 OBX segments for Social History OBR

OBX Segment	Mandatory	Value	Comment	Code
Interpreter Required	No	Yes or No	The patient's first language is shown in <PID.15>	X0006-0
History of tobacco use	No	Current smoker, Ex smoker, Non smoker or Unknown		11366-2
Cigarettes Smoked per day	No	Numeric	Available to complete if patient is a current or ex smoker. Not mandatory	8663-7
Years Smoking	No	Numeric	Available to complete if patient is a current or ex smoker. Not mandatory	X0007-0
History of Alcohol use	No	Yes or No		11330-8
Units of Alcohol per week	No	Numeric	Available to complete if patient is a drinker. Not mandatory	X0011-0

Physical Mobility Impairment	No	Yes or No	Often described as "Wheelchair Assistance" on GP systems	28189-9
Next of Kin	No	Text	The next of kin for an adult, the parent or guardian for a child	X0056-0

Table 17 OBX Segments for Social History

If the patient uses cigarettes or alcohol, then subsequent OBX segments indicates how many cigarettes per day, years smoking, or units of alcohol per week are consumed. Neither the smoking or alcohol history or the subsequent detailed data related to these items are mandatory. Smoking history is mandatory in the Lung Cancer Referral Message.

The structured data segments in Social History are optional. If there is a need to write a free text entry for a patient's social history this should be entered under the Segment 'Additional Relevant Information'.

Next of Kin is an optional field. This may contain the Name of the Parent or Guardian when a child is being referred. This field is included to maintain compatibility between electronic general referrals and the HIQA GP Referral Template.

```
<REF_I12.OBSERVATION>
        <OBR>
            <OBR.1>2</OBR.1>
            <OBR.2>
                <EI.1>REF20100401162054003564</EI.1>
                <EI.2>Referral Control Number</EI.2>
                <EI.3/>
                <EI.4/>
            </OBR.2>
            <OBR.3/>
            <OBR.4>
                <CE.1>29762-2</CE.1><CE.2>Social
History</CE.2><CE.3>LN</CE.3>
            </OBR.4>
            <OBR.7><TS.1>20100401</TS.1></OBR.7>
            <OBR.25/>
        </OBR>
        <REF_I12.RESULTS_NOTES>
            <OBX>
                <OBX.1>1</OBX.1>
                <OBX.2>FT</OBX.2>
                <OBX.3>
                    <CE.1>X0006-0</CE.1>
```

<CE.2>Interpreter Required</CE.2>
<CE.3>L</CE.3>
</OBX.3>
<OBX.5>No</OBX.5>
<OBX.6/>
<OBX.7/>
<OBX.8/>
<OBX.11>F</OBX.11>
<OBX.14><TS.1>20100401</TS.1></OBX.14>
</OBX>
</REF_I12.RESULTS_NOTES>
<REF_I12.RESULTS_NOTES>
<OBX>
<OBX.1>2</OBX.1>
<OBX.2>FT</OBX.2>
<OBX.3>
<CE.1>28189-9</CE.1>
<CE.2>Physical mobility impairment</CE.2>
<CE.3>LN</CE.3>
</OBX.3>
<OBX.5>No</OBX.5>
<OBX.6/>
<OBX.7/>
<OBX.8/>
<OBX.11>F</OBX.11>
<OBX.14><TS.1>20100401</TS.1></OBX.14>
</OBX>
</REF_I12.RESULTS_NOTES>
<REF_I12.RESULTS_NOTES>
<OBX>
<OBX.1>3</OBX.1>
<OBX.2>FT</OBX.2>
<OBX.3>
<CE.1>11366-2</CE.1>
<CE.2>History of tobacco use</CE.2>
<CE.3>LN</CE.3>
</OBX.3>
<OBX.5>Smoker</OBX.5>
<OBX.6/>
<OBX.7/>
<OBX.8/>
<OBX.11>F</OBX.11>
<OBX.14><TS.1>20100401</TS.1></OBX.14>
</OBX>
</REF_I12.RESULTS_NOTES>
<REF_I12.RESULTS_NOTES>
<OBX>
<OBX.1>4</OBX.1>
<OBX.2>NM</OBX.2>
<OBX.3>

```
                        <CE.1>8663-7</CE.1>
                        <CE.2>Cigarettes Smoked per day</CE.2>
                        <CE.3>LN</CE.3>
                    </OBX.3>
                    <OBX.5>12</OBX.5>
                    <OBX.6/>
                    <OBX.7/>
                    <OBX.8/>
                    <OBX.11>F</OBX.11>
                    <OBX.14><TS.1>20100401</TS.1></OBX.14>
                </OBX>
            </REF_I12.RESULTS_NOTES>
            <REF_I12.RESULTS_NOTES>
                <OBX>
                    <OBX.1>5</OBX.1>
                    <OBX.2>NM</OBX.2>
                    <OBX.3>
                        <CE.1>X0007-0</CE.1>
                        <CE.2>Years Smoking</CE.2>
                        <CE.3>L</CE.3>
                    </OBX.3>
                    <OBX.5>5</OBX.5>
                    <OBX.6/>
                    <OBX.7/>
                    <OBX.8/>
                    <OBX.11>F</OBX.11>
                    <OBX.14><TS.1>20100401</TS.1></OBX.14>
                </OBX>
            </REF_I12.RESULTS_NOTES>
            <REF_I12.RESULTS_NOTES>
                <OBX>
                    <OBX.1>6</OBX.1>
                    <OBX.2>FT</OBX.2>
                    <OBX.3>
                        <CE.1>11330-8</CE.1>
                        <CE.2>History of alcohol use</CE.2>
                        <CE.3>LN</CE.3>
                    </OBX.3>
                    <OBX.5>Yes</OBX.5>
                    <OBX.6/>
                    <OBX.7/>
                    <OBX.8/>
                    <OBX.11>F</OBX.11>
                    <OBX.14><TS.1>20100401</TS.1></OBX.14>
                </OBX>
            </REF_I12.RESULTS_NOTES>
            <REF_I12.RESULTS_NOTES>
                <OBX>
                    <OBX.1>7</OBX.1>
                    <OBX.2>NM</OBX.2>
```

```
                    <OBX.3>
                        <CE.1>X0011-0</CE.1>
                        <CE.2>Units of Alcohol per week</CE.2>
                        <CE.3>L</CE.3>
                    </OBX.3>
                    <OBX.5>20</OBX.5>
                    <OBX.6/>
                    <OBX.7/>
                    <OBX.8/>
                    <OBX.11>F</OBX.11>
                    <OBX.14><TS.1>20100401</TS.1></OBX.14>
                </OBX>
            </REF_I12.RESULTS_NOTES>
            <REF_I12.RESULTS_NOTES>
                <OBX>
                    <OBX.1>8</OBX.1>
                    <OBX.2>FT</OBX.2>
                    <OBX.3>
                        <CE.1>X0056-0</CE.1>
                        <CE.2>Next of Kin</CE.2>
                        <CE.3>L</CE.3>
                    </OBX.3>
                    <OBX.5>Mary Murphy</OBX.5>
                    <OBX.6/>
                    <OBX.7/>
                    <OBX.8/>
                    <OBX.11>F</OBX.11>
                    <OBX.14><TS.1>20100401</TS.1></OBX.14>
                </OBX>
            </REF_I12.RESULTS_NOTES>

</REF_I12.OBSERVATION>
```

6.7 Clinical Examination Segments *

In a general referral message the general practitioner needs to decide what clinical examination information is relevant to the referral. Some structured information could be regarded as useful across a range of referrals, such as Blood Pressure, Pulse, Height, Weight and Body Mass Index. Existing information on these items should be auto populated from the patient record. The information needs to be described along with the date it was recorded. None of these items of data are mandatory. Most information in this segment will be free text entered by the GP making the referral.

Here are some useful LOINC codes:

Text	**LOINC code**
Systolic Blood Pressure in mm/Hg	8480-6

Diastolic Blood Pressure in mm/Hg	8462-4
Pulse in beats per minute	8893-0
Body Height (Measured) in Metres	3137-7
Weight (Measured) in Kg	3141-9
Body Mass Index (BMI) Kg/M^2	39156-5

Table 18 LOINC codes for Clinical Examinations

```
<REF_I12.OBSERVATION>
        <OBR>
            <OBR.1>3</OBR.1>
            <OBR.2>
                <EI.1>REF20100401162054003564</EI.1>
                <EI.2>Referral Control Number</EI.2>
                <EI.3/>
                <EI.4/>
            </OBR.2>
            <OBR.3/>
            <OBR.4>
                <CE.1>22029-3</CE.1>
            <CE.2>Physical exam.total</CE.2>
            <CE.3>LN</CE.3>
        </OBR.4>
            <OBR.7>
                <TS.1>20100401</TS.1>
        </OBR.7>
        </OBR>
        <REF_I12.RESULTS_NOTES>
            <OBX>
                <OBX.1>1</OBX.1>
                <OBX.2>FT</OBX.2>
                <OBX.3>
                    <CE.1>22029-3</CE.1>
                    <CE.2>Physical exam.total</CE.2>
                    <CE.3>LN</CE.3>
                </OBX.3>
                <OBX.5>Heart, lungs and abdomen normal</OBX.5>
                <OBX.6/>
                <OBX.7/>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14>
                    <TS.1>20100401</TS.1>
                </OBX.14>
            </OBX>
        </REF_I12.RESULTS_NOTES>
```

```
<REF_I12.RESULTS_NOTES>
        <OBX>
                <OBX.1>2</OBX.1>
                <OBX.2>NM</OBX.2>
                <OBX.3>
                        <CE.1>8480-6</CE.1>
                        <CE.2>Systolic Blood pressure</CE.2>
                        <CE.3>LN</CE.3>
                </OBX.3>
                <OBX.5>140</OBX.5>
                <OBX.6><CE.1> mm/Hg </CE.1></OBX.6>
                <OBX.6><CE.2> mm/Hg </CE.2></OBX.6>
                <OBX.6><CE.3> L </CE.3></OBX.6>
                <OBX.7/>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14>
                        <TS.1>20100401</TS.1>
                </OBX.14>
        </OBX>
</REF_I12.RESULTS_NOTES>
<REF_I12.RESULTS_NOTES>
        <OBX>
                <OBX.1>3</OBX.1>
                <OBX.2>NM</OBX.2>
                <OBX.3>
                        <CE.1>8462-4</CE.1>
                        <CE.2>Diastolic Blood pressure</CE.2>
                        <CE.3>LN</CE.3>
                </OBX.3>
                <OBX.5>90</OBX.5>
                <OBX.6><CE.1> mm/Hg </CE.1></OBX.6>
                <OBX.6><CE.2> mm/Hg </CE.2></OBX.6>
                <OBX.6><CE.3> L </CE.3></OBX.6>
                <OBX.7/>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14>
                        <TS.1>20100401</TS.1>
                </OBX.14>
        </OBX>
</REF_I12.RESULTS_NOTES>
</REF_I12.OBSERVATION>
```

6.8 Laboratory Studies Segments *

This segment provides laboratory test results. In the electronic cancer referrals we included specific laboratory results e.g. PSA in the cancer specific segment and allowed the Laboratory Studies segment to be free text entry by the GP. In paper referrals generated from the GP systems it is possible to pick which laboratory results to include in the referral. This is needed for an electronic

general referral message. The GP should be able to select results by test or battery (FBC, Renal Profile, Glucose, etc.) or by time interval (last four weeks) or by number of results (last 10 laboratory results). The capacity to include results for a test over a period of time e.g. HbA1c results over the last 12 months would be useful. The referring GP must be able to include test results that he or she feels are relevant to the referral. The maximum number of laboratory test or profile results that can be included in a referral is 50.

Thus the OBR segment for Laboratory Studies will be followed by multiple OBR/OBX combinations for batteries or tests. The test results should include all the fields which come into the practice software system from the laboratory, including the test name and code, the result, the units, the range, abnormal flags, the result status and the date the sample was taken.

Here is a possible structure for sending a Full Blood Count (FBC) and a Hepatic Profile. It is possible to also have NTE segments as part of a laboratory result.

OBR (Laboratory Studies) OBR (FBC) OBX (WBC) OBX (RBC) OBX (Hb) OBX (HCT) OBX (MCV) OBX (MCHC) OBX (RDW) OBX (PLT) OBX (NEUT) OBX (LYMPH) OBX (MONO) OBX (EOS) OBX (BASO) OBX (MCH) OBR (Hepatic Profile) OBX (ALT) OBX (BILI) OBX (ALK) OBX (GGT) OBX (TP) OBX (ALB)

Table 19 Format for Laboratory Results

```
<REF_I12.OBSERVATION>
        <OBR>
                <OBR.1>4</OBR.1>
                <OBR.2>
                        <EI.1>REF200811271620543564</EI.1>
```

```
                    <EI.2>Referral Control Number</EI.2>
                    <EI.3/>
                    <EI.4/>
                </OBR.2>
                <OBR.3/>
                <OBR.4>
                    <CE.1>26436-6</CE.1>
                    <CE.2>Laboratory Studies</CE.2>
                    <CE.3>LN</CE.3>
                </OBR.4>
                <OBR.7>
                    <TS.1>20090401</TS.1>
                </OBR.7>
        </OBR>
<REF_I12.RESULTS_NOTES/>
</REF_I12.OBSERVATION>
<REF_I12.OBSERVATION>
        <OBR>
                <OBR.1>5</OBR.1>
                <OBR.2>
                    <EI.1>11536</EI.1>
                </OBR.2>
                <OBR.3>
                    <EI.1>BH015259N</EI.1>
                    <EI.2>Haematology, Waterford Regional Hospital</EI.2>
                </OBR.3>
                <OBR.4>
                    <CE.1>F</CE.1>
                    <CE.2>FBC</CE.2>
                    <CE.3>L</CE.3>
                </OBR.4>
                <OBR.7>
                    <TS.1>200401140000</TS.1>
                </OBR.7>
                <OBR.14>
                    <TS.1>200401161024</TS.1>
                </OBR.14>
                <OBR.15>
                    <SPS.1>
                        <CE.1>T034</CE.1>
                    </SPS.1>
                    <SPS.2>W.BLOOD</SPS.2>
                </OBR.15>
                <OBR.16>
                    <XCN.1>03463
</XCN.1>
                    <XCN.2>
                        <FN.1>Dr. Malachy Murphy</FN.1>
                    </XCN.2>
                </OBR.16>
```

```
            <OBR.22>
                <TS.1>200401161600</TS.1>
            </OBR.22>
            <OBR.24>HM</OBR.24>
        </OBR>
<REF_I12.RESULTS_NOTES>
<OBX><OBX.1>1</OBX.1><OBX.2>NM</OBX.2><OBX.3><CE.1>WBC</CE.1
><CE.2>WBC</CE.2><CE.3>L</CE.3></OBX.3>
<OBX.5>4.9</OBX.5><OBX.6><CE.1>x10</CE.1></OBX.6><OBX.7>4-
10</OBX.7><OBX.11>F</OBX.11><OBX.14>
<TS.1>200401161600</TS.1></OBX.14></OBX></REF_I12.RESULTS_NOTES>
<REF_I12.RESULTS_NOTES>
<OBX><OBX.1>2</OBX.1><OBX.2>NM</OBX.2><OBX.3><CE.1>RBC</CE.1>
<CE.2>RBC</CE.2><CE.3>LC</CE.3></OBX.3><OBX.5>4.88</OBX.5><OBX.6
><CE.1>x10</CE.1></OBX.6><OBX.7>3.84.8</OBX.7><OBX.8>H</OBX.8><O
BX.11>F</OBX.11><OBX.14><TS.1>200401161600</TS.1></OBX.14></OBX>
</REF_I12.RESULTS_NOTES>
<REF_I12.RESULTS_NOTES>
<OBX><OBX.1>3</OBX.1><OBX.2>NM</OBX.2><OBX.3><CE.1>HB</CE.1><
CE.2>HB</CE.2><CE.3>LC</CE.3></OBX.3>
<OBX.5>14.7</OBX.5><OBX.6><CE.1>g/dl</CE.1></OBX.6><OBX.7>12-
15</OBX.7><OBX.11>F</OBX.11><OBX.14>
<TS.1>200401161600</TS.1></OBX.14></OBX></REF_I12.RESULTS_NOTES>
<REF_I12.RESULTS_NOTES>
<OBX><OBX.1>4</OBX.1><OBX.2>NM</OBX.2><OBX.3><CE.1>HCT</CE.1>
<CE.2>HCT</CE.2><CE.3>L</CE.3></OBX.3>
<OBX.5>43.6</OBX.5><OBX.6><CE.1>L/L</CE.1></OBX.6><OBX.7>36-
46</OBX.7><OBX.11>F</OBX.11><OBX.14>
<TS.1>200401161600</TS.1></OBX.14></OBX>
</REF_I12.RESULTS_NOTES>
</REF_I12.OBSERVATION>
```


6.9 Radiology Study Reports Segments *

During the next two years the National Integrated Medical Imaging System (NIMIS) Project will rollout to hospitals nation wide. This will mean that GPs will get radiology reports in HL7XML format through Healthlink. It is important that GPs are able to include relevant imaging reports when making a referral. GPs need to be able to choose which radiology reports to include. The GP should be able to select reports by test name (Chest X Ray, Abdominal Ultrasound, etc.) or by time interval (within the last four weeks) or by number of reports (last 5 radiology reports). The format is the same as for laboratory results. The maximum number of radiology reports that can be included in a referral is 10.

OBR (Radiology Study Reports)
OBR (CXR)

OBX (CXR) OBR (Abdominal Ultrasound) OBX (Abdominal Ultrasound)

Table 20 Format for Radiology Study Results

```
<REF_I12.OBSERVATION>
        <OBR>
            <OBR.1>6</OBR.1>
            <OBR.2>
                <EI.1>REF200811271620543564</EI.1>
                <EI.2>Referral Control Number</EI.2>
                <EI.3/>
                <EI.4/>
            </OBR.2>
            <OBR.3/>
            <OBR.4>
                <CE.1>18726-0</CE.1>
                <CE.2>Radiology Study Reports</CE.2>
                <CE.3>LN</CE.3>
        </OBR.4>
            <OBR.7>
                <TS.1>20090401</TS.1>
        </OBR.7>
        </OBR>
    <REF_I12.RESULTS_NOTES/>
</REF_I12.OBSERVATION>
<REF_I12.OBSERVATION>
    <OBR>
        <OBR.1>7</OBR.1>
        <OBR.2>
            <EI.1/>
            <EI.2/>
        </OBR.2>
        <OBR.3>
            <EI.1>500001</EI.1>
            <EI.2>TOREX</EI.2>
            <EI.3/>
            <EI.4/>
        </OBR.3>
        <OBR.4>
            <CE.1>0049</CE.1>
            <CE.2>KNEE</CE.2>
            <CE.3>L</CE.3>
            <CE.4/>
            <CE.5/>
            <CE.6/>
        </OBR.4>
        <OBR.7>
```

```
                <TS.1/>
            </OBR.7>
            <OBR.13>N/A</OBR.13>
            <OBR.16>
                <XCN.1>10759</XCN.1>
                <XCN.2>
                    <FN.1>BEATTY</FN.1>
                </XCN.2>
                <XCN.3>MARY</XCN.3>
                <XCN.4/>
                <XCN.5/>
                <XCN.6>DR</XCN.6>
            </OBR.16>
            <OBR.24>RAD</OBR.24>
            <OBR.25>F</OBR.25>
        </OBR>
        <REF_I12.RESULTS_NOTES>
            <OBX>
                <OBX.1>1</OBX.1>
                <OBX.2>FT</OBX.2>
                <OBX.3>
                    <CE.1>0049</CE.1>
                    <CE.2>KNEE</CE.2>
                    <CE.3>L</CE.3>
                    <CE.4/>
                    <CE.5/>
                    <CE.6/>
                </OBX.3>
                <OBX.5>fracture evident to left patella. <escape v=".br"/>
Conclusion : broken knee</OBX.5>
                <OBX.6>
                    <CE.1/>
                    <CE.2/>
                    <CE.3/>
                    <CE.4/>
                    <CE.5/>
                    <CE.6/>
                </OBX.6>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14><TS.1>20100727</TS.1></OBX.14>
            </OBX>
        </REF_I12.RESULTS_NOTES>
</REF_I12.OBSERVATION>
```

6.10 Current Medication Segments

This provides information on the medication currently prescribed, both one off prescriptions and repeat prescriptions. It should include the name of the drug,

the dose, the frequency and the method of administration. The first OBX segment, with <OBX.3> Anticoagulant Use </OBX.3> indicates whether the patient is taking anticoagulants such as aspirin, warfarin, heparin or plavix. If the patient is taking anticoagulants then these are listed, along with other medication, in the subsequent OBX segments. Use a separate OBX segment for each drug prescribed.

OBX Segment	Mandatory	Value	Comment	Code
Anticoagulant Use	No	Yes or No	Is the patient on aspirin, warfarin, plavix or any other anticoagulant? To be completed by the GP	X0010-0
Current Medication	No	Text	Repeatable Segment. Use a single OBX segment for each drug	19009-0

Table 21 OBX segments for Current Medication

```
<REF_I12.OBSERVATION>
        <OBR>
                <OBR.1>8</OBR.1>
                <OBR.2>
                        <EI.1>REF20100401162054003564</EI.1>
                        <EI.2>Referral Control Number</EI.2>
                        <EI.3/>
                        <EI.4/>
                </OBR.2>
                <OBR.3/>
                <OBR.4>
                        <CE.1>19009-0</CE.1>
                        <CE.2>Current Medication</CE.2>
                        <CE.3>LN</CE.3>/>
                </OBR.4>
                <OBR.7>
                        <TS.1>20100401</TS.1>/>
                </OBR.7>
        </OBR>
        <REF_I12.RESULTS_NOTES>
        <OBX>
                <OBX.1>1</OBX.1>
                <OBX.2>FT</OBX.2>
                <OBX.3>
```

```
                <CE.1>X0010-0</CE.1>
                <CE.2>Anticoagulant Use</CE.2>
                <CE.3>L</CE.3>
            </OBX.3>
            <OBX.5>Yes</OBX.5>
            <OBX.11>F</OBX.11>
            <OBX.14>
                <TS.1>20100401</TS.1>
            </OBX.14>
        </OBX>
        </REF_I12.RESULTS_NOTES>
        <REF_I12.RESULTS_NOTES>
        <OBX>
            <OBX.1>2</OBX.1>
            <OBX.2>FT</OBX.2>
            <OBX.3>
                <CE.1>19009-0</CE.1>
                <CE.2>Current Medication</CE.2>
                <CE.3>LN</CE.3>/>
            </OBX.3>
            <OBX.5>Warfarin 3mg daily</OBX.5>
            <OBX.11>F</OBX.11>
            <OBX.14>
                <TS.1>20100401</TS.1>
            </OBX.14>
        </OBX>
        </REF_I12.RESULTS_NOTES>
        <REF_I12.RESULTS_NOTES>
        <OBX>
            <OBX.1>3</OBX.1>
            <OBX.2>FT</OBX.2>
            <OBX.3>
                <CE.1>19009-0</CE.1>
                <CE.2>Current Medication</CE.2>
                <CE.3>LN</CE.3>
            </OBX.3>
            <OBX.5>Propranolol 10mg tds</OBX.5>
            <OBX.11>F</OBX.11>
            <OBX.14>
                <TS.1>20100401</TS.1>
            </OBX.14>
        </OBX>
        </REF_I12.RESULTS_NOTES>
</REF_I12.OBSERVATION>
```

6.11 Patient Visit Segment

Contains information on pregnancy status and public/private status.

```
<REF_I12.PATIENT_VISIT>
            <PV1>
```

```
                <PV1.2>O</PV1.2>
                <PV1.15>B8</PV1.15>
                <PV1.20>
                        <FC.1>04</FC.1>
                        <FC.2></FC.2>
                </PV1.20>
        </PV1>
</REF_I12.PATIENT_VISIT>
```

7. Code Tables

<MSH.3> Sending Application

The format is the name of the GP practice software system, Healthlink, Healthlink Message Type ID e.g. COMPLETEGP.HEALTHLINK.20

GP Practice Software System	Code
CompleteGP	COMPLETEGP
Health One	HEALTHONE
Helix Practice Manager	HELIXPM
Socrates	SOCRATES
MedTech32	MEDTECH

Table 22 Code Table for Practice Software Systems

Healthlink Message Type	Message Type ID
Prostate Cancer Referral	20
Prostate Cancer Referral Response	21
Breast Cancer Referral	22
Breast Cancer Referral Response	23
Acknowledgement	13
Lung Cancer Referral	24
Lung Cancer Referral Response	25
General Referral	30
General Referral Response	31

Table 23 Code table for Message Type IDs

<MSH.6> Receiving Facility

Populated via Web Services.

Hospitals	Code

Table 24 Code table for Hospitals receiving general referrals

<MSH.11> Processing ID

Description	Code
Debugging	D
Production	P
Training	T

Table 25 HL7 Table 0103 - Processing ID

<RF1.1> Referral Status

Description	Code
Accepted	A
Pending	P
Rejected	R
Expired	E

Table 26 User-defined Table 0283 – Referral status

<RF1.2> Referral Priority

Description	Code
Urgent	U
Routine	R

Table 27 User-defined Table 0280 - Referral priority

<RF1.3> Referral Type

Description	Code
Prostate	Prostate
Breast	Breast
Lung	Lung

General	General

Table 28 Referral Type

<PRD.1> Provider Role

Description	Code
Primary Care Provider	PP
Referred To Provider	RT
Referring Provider	RP

Table 29 User-defined table 0286 - Provider role

<PRD.5> Provider Communication Information

Description	Code
Primary Residence Number	PRN
Other Residence Number	ORN
Work Number	WPN
Vacation Home Number	VHN
Answering Service Number	ASN
Emergency Number	EMR
Network (email) Address	NET
Beeper Number	BPN

Table 30 HL7 Table 0201 – Telecommunication Use Code

<PV1.15> Ambulatory Status

Description	Code
B6	Pregnant
B7	Not Pregnant
B8	Unknown

Table 26 User-defined Table 0009 – Ambulatory Status

<PV1.20> Financial Class

Description	Code
01	Medical Card

02	Public patient
03	Semi private patient
04	Private patient

Table 27 User-defined Table 0064 – Financial Class

8. Importance of Acknowledgement Message

If no acknowledgement message is received back from i.PM within 1 hour, then the hospital has not received the referral. It is vitally important that the GP is made aware of this fact. A situation where the GP thinks he or she has made a referral and the hospital patient administration system has not received a referral would be catastrophic for a patient. The GP needs to be aware that no acknowledgement means the referral has not been received. If this occurs the GP should print out the referral in paper format and post or fax it to the hospital. The GP should also alert his or her GP practice software company to the problem.

9. Informing GPs and Practice Work Flow

When a valid referral response message is received from i.PM, the GP practice software system needs to notify the GP who made the initial general referral of the contents of the referral response message. There needs to be a failsafe procedure in place so that if this message is not viewed within a defined period of time, an alert is generated to other GPs and the practice manager or system administrator that the message remains unread.

Depending on the nature of the information contained in the OBR/OBX segments the GP may need to act on the referral response information. For example, the GP may need to arrange an investigation, prescribe medication or review the patient. The GP practice software system should alert the GP to the need for these tasks and facilitate the actions required to complete these tasks.

If the GP does not receive a referral response message within 12 days, the GP needs to be alerted to this and informed to make contact with the hospital by phone, fax or letter to confirm that the patient is being reviewed.

It is important and required that the system audit trail track the receipt of the referral response message, the reading of the message and any action that ensues.

8. Addendum: For Hospital Vendors

For hospital intending on importing/migrating Healthlink referrals into their internal systems, the following format will applies to the MSH.4 & MSH.6 segments.

Message Header Segment (MSH)

Field	Mand	Value	Comment	HL7
Sending Facility	Yes	012121.5044	GP's Medical Council Number along with Healtlhink PracticeID (format MCN.HLPracticeID)	<MSH.4>
Receiving Facility	Yes	904.94	Hospital Code along with either the Healthlink Entity Code or Agency ID The HD.3 segment will contain either L (indicating EntityCode present) or HospitalID.AgencyID	<MSH.6>

The sending facility <MSH.4> will contain the GP's medical council number along with the Healthlink practice identifier. The format is GP's family name and first name, code &, coding system, where 'MCN.HLPracticeID' signifies the coding system used.

```
<?xml version="1.0" encoding="UTF-8"?>
<REF_I12 xmlns="urn:hl7-org:v2xml">
        <MSH>
                <MSH.1>|</MSH.1>
                <MSH.2>^~\&amp;amp;</MSH.2>
                <MSH.3>
                        <HD.1>HLONLINE.HEALTHLINK.XX</HD.1>
                        <HD.2/>
                        <HD.3/>
                </MSH.3>
                <MSH.4>
                        <HD.1>Dr. Smith, John</HD.1>
                        <HD.2>012121.5044</HD.2>
                        <HD.3>MCN.HLPracticeID</HD.3>
                </MSH.4>
```

```
        <MSH.5>
                <HD.1>i.PM</HD.1>
                <HD.2/>
                <HD.3/>
        </MSH.5>
        <MSH.6>
                <HD.1>St. James's Hospital</HD.1>
                <HD.2>904.104</HD.2>
                <HD.3>L</HD.3>
        </MSH.6>
        <MSH.7>
                <TS.1>20100401103136</TS.1>
        </MSH.7>
        <MSH.9>
                <MSG.1>REF</MSG.1>
                <MSG.2>I12</MSG.2>
        </MSH.9>
        <MSH.10>REF20100401162054003564</MSH.10>
        <MSH.11>
                <PT.1>P</PT.1>
        </MSH.11>
        <MSH.12>
                <VID.1>2.4</VID.1>
        </MSH.12>
        <MSH.15>AL</MSH.15>
</MSH>
```