Message Construction Guide for GP Software Vendors: Generic cancer referral format

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Version: 2.0
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Version History:

Date	Version	Authors	Reason for change
02/07/2009	1.1	Brian O'Mahony, Gemma Garvan, Senthil Nathan, Orla Doogue	Initial Draft
05/08/2009	1.2	Senthil Nathan	Added Local code for 'Years Smoking'
15/09/2009	1.3	Martin Krim	Review of MSH, RF1, PRD and PID segment details
22/09/2009	1.4	Orla Doogue	Moved all LOINC codes from ce.4-ce.6 fields into ce.1-ce.3 fields.
01/10/2009	1.5	Martin Krim	Amended section on current medication (anticoagulants), removed reference to referral response ACK message.
30/10/2009	1.6	Senthil Nathan	Added 'Cigarettes Smoked per day' and 'Years Smoking' OBX Segment.
10/12/2009	1.7	Martin Krim	Updated message flow diagram, added back reference to referral response ACK message.
15/04/2010	1.8	Senthil Nathan	Updated Mandatory requirement of the 'Referral Priority' field in the Referral Information Segment (RF1) '
04/05/2010	1.9	Senthil Nathan	Updated Table-5 'Provider Identifier' field mandatory requirement. Updated Table-9 'Ambulatory Status' field mandatory requirement and possible values.
24/01/2011	2.0	Senthil Nathan	Updated MSH Segment receiving facility application name to

			‘HEALTHLINKONLINE’. In Table 9 changed Financial Class (PV1.20) field as non-mandatory. XML sample changes: Updated PRD.5 Segment to include email addresses, fax and telecommunication equipment type details. Changed data type to ‘NM’ for ‘Units of Alcohol per week’ field. Updated MSH.5, HD.1 to ‘HEALTHLINKONLINE’. Updated ‘Laboratory Studies’ and ‘Radiology Study Reports’ Segments OBX values.

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1. Document Aim

This document aims to help GP Software Vendors to construct a cancer 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 Discharge Summaries and Out of Hours Coop messages.

2. Overview

Seven electronic cancer referral messages will be put in place over a two-year period. The referral messages for the first year are for breast cancer, prostate cancer and lung cancer.

The intention will be to make most of the components of an electronic referral message reusable across all the cancer types. The reusable components will be segments on:

- Message Header;
- Information on the referral, the person making the referral and the person receiving the referral;
- Identification of the patient;
- Segments on Medical History, Social History, Clinical Examination, Laboratory Studies, Radiology Study Reports and Current Medication;

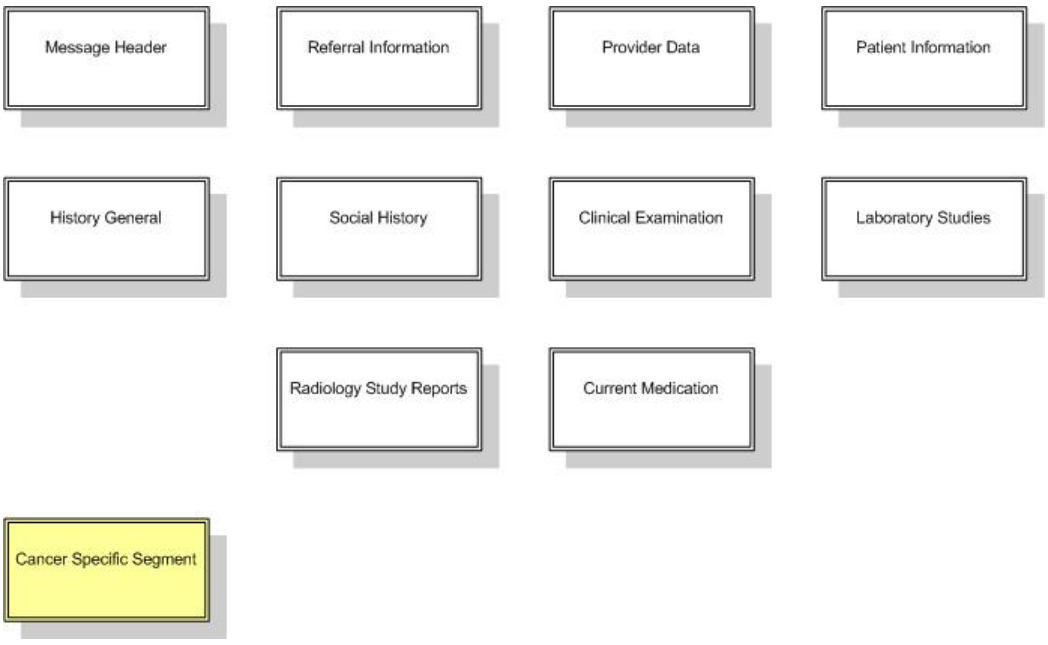

Figure 1 Architecture of Cancer Referral Messages

For each cancer referral type, there will be a cancer specific segment to relate information of relevance to that individual cancer. This cancer specific segment will be different for each cancer type.

3. Message Flow

A cancer referral message is generated by the practice software system. Healthlink acknowledges this. The cancer specialist centre generates a referral response message. This is acknowledged by the GP.

GP software vendors should upload single cancer referral messages, via Web Services, as they are created. Healthlink will deliver acknowledgement messages 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 specialist cancer centre. In this way, everyone sees the same thing.

When the referring GP has created the cancer 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.

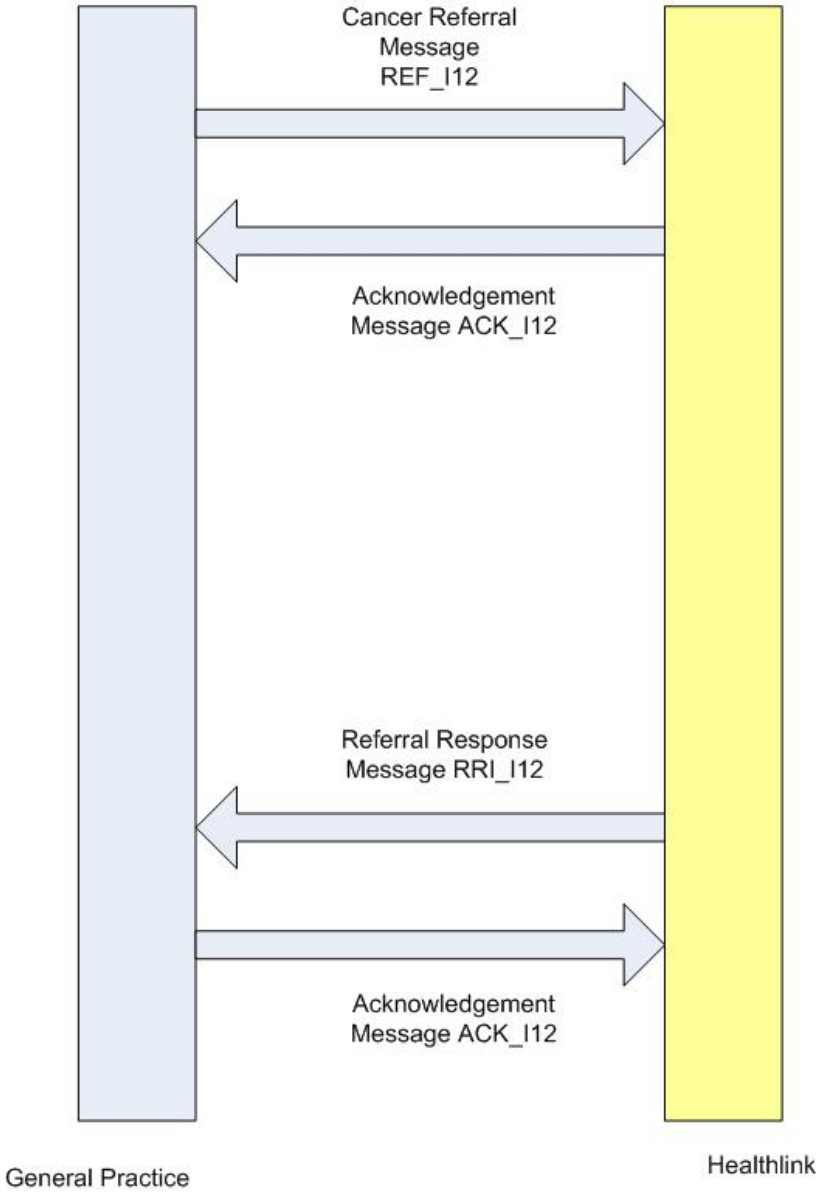

Figure 2 Message Flow Diagram

The referral message should be validated by the GP software system prior to transmission to Healthlink. If there is a problem with the referral message, Healthlink 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.

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 cancer 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	6
[{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
[{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

REF^I12	Patient Referral	Chapter
[PV2]	Patient Visit Additional Info	3
]		
[{NTE}]	Notes and Comments	2

Table 1 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 2 Segments in use in this implementation

4.1 Message Header Segment (MSH)

Field	Mand	Value	Comment	HL7
Sending Application	Y	HELIXPM.HEALTHLINK.20	Made up of name of GP Practice Software System, Healthlink and Healthlink Message Type, see code tables for possible values	<MSH.3>
Sending Facility	Y		GP's Medical Council Number.	<MSH.4>
Receiving Application	Y		HealthlinkOnline	<MSH.5>
Receiving Facility	Y	Populated via WS, method GetAvailableServices	Specialist Cancer Centre	<MSH.6>
Date/time of message	Y	YYYYMMDDHHMM		<MSH.7>

Message Type	Y	REF_I12		<MSH.9>
Message Control ID	Y	REF2008112716 20543564	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 Medical Council Number.	<MSH.10>
Processing ID	Y	P		<MSH.11>
Version ID	Y	2.4	HL7 version number	<MSH.12>
Accept ACK Type	Y	AL	ACK always expected	<MSH.15>

Table 3 Message Header Segment

4.2 Referral Information Segment (RF1)

Field	Mand	Value	Comment	HL7
Referral Status	Y	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	Y		Type of cancer referral: prostate, breast, lung, etc.	<RF1.3>
Originating Referral ID	Y	Varchar(30)	Assigned by practice management system, no requirements as to the format or structure	<RF1.6>
Referral Date	Y	YYYYMMDD	Date of referral	<RF1.7>

Table 4 Referral Information Segment

4.3 Provider Data Segment (PRD)

Field	Mand	Value	Comment	HL7
Provider Role	Y	PP or RT	Primary Care Provider or Referred To Provider, user defined table 0286	<PRD.1>
Provider Name			Name of the GP making the referral or the consultant receiving the referral. The GP name should always be available, the consultant's may not.	<PRD.2>
Provider Address	Y	Four lines, each line Varchar(30)	Practice or Cancer Centre Address, first two lines are mandatory. Practice address should always be available, Cancer Centre Address may not.	<PRD.3>
Provider Location	Y	GP Practice or Hospital Department	Used to identify the general practice, hospital department, clinic or specialist unit	<PRD.4>
Provider Communication Information	Y	Varchar(50)	Repeatable datatype for phone numbers, email address; use HL7 table 0201	<PRD.5>
Provider identifier	Y	Doctor's medical council number	Mandatory when PRD is 'Primary Care Provider'	<PRD.7>

Table 5 Provider Data Segment

4.4 Patient Identification Segment (PID)

Field	Mand	Value	Comment	HL7
Patient Identifier	Y	Populated via WS, method SearchPatients	Hospital MRN, received from Healthlink after patient search	<PID.3>
Patient	Y	Varchar(50)	Family name, first	<PID.5>

Name			name, middle name or initial, title	
Date of Birth	Y	YYYYMMDD	Min: 19000101 Max: current date minus 10 years	<PID.7>
Gender	Y	F, M	F for female, M for male	<PID.8>
Address	Y	Four lines, each line Varchar(30)	Four lines, first two are mandatory	<PID.11>
Phone number	Y	Varchar(20)	Use this for a home or business or mobile number or email or all four, at least one phone number is required, use HL7 table 0201	<PID.13>
First language	Y	Download the table from the Internet	Uses ISO table 639	<PID.15>

Table 6 Patient Identification Segment

4.5 Observation Request Segment (OBR)

Field	Mand	Value	Comment	HL7
Set ID	Y	Numeric	Starts at 1 and incrementally increases, order is not significant	<OBR.1>
Placer Order Number	Y	REF2008112716 20543564	Referral Control Number, same as <MSH.10> Message Control ID	<OBR.2>
Universal Service Identifier	Y	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 7 Observation Request Segment

4.6 Observation Result Segment (OBX)

Field	Mand	Value	Comment	HL7
Set ID	Y	Numeric	Starts at 1 and incrementally increases, order is not significant	<OBX.1>
Value type	Y	FT for formatted text/NM for Numeric		<OBX.2>
Observation identifier	Y	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	Y		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	Y	F	F for final	<OBX.11>
Date/time of the observation	Y	YYYYMMDD	Timestamp	<OBX.14>

Table 8 Observation Result Segment

4.7 Organisation of OBR and OBX Segments

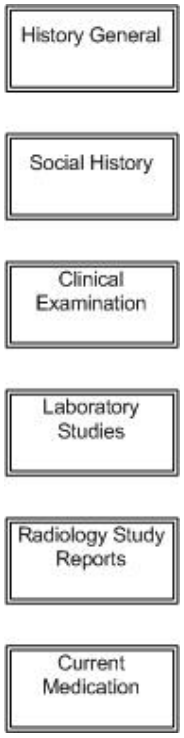

Figure 3 Organisation of OBR segments

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 Class	Y	The class of the patient in terms of: Inpatient, Outpatient, Emergency, Unknown		<PV1.2>
Ambulatory Status		Pregnant, Not Pregnant, Unknown	Indicates pregnancy status	<PV1.15>
Financial Class		Medical Card, Public, Private, Semiprivate	The Public/Private status of the patient, see Table 0064	<PV1.20>

Table 9 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 10 LOINC codes for OBR segments

5.2 LOINC Codes for Observation Result Segments (OBX)

Text	LOINC code
History of present illness	10164-2
History of family member diseases	10157-6
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 11 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
Comments Reason for Referral	X0008-0	Text explaining why an urgent referral is requested
Anticoagulant Use	X0010-0	Yes No
Units of Alcohol per week	X0011-0	Numeric

Table 12 Local codes

6. Specific Information for Individual Cancer Type Referrals

Each cancer referral type will have its own specific segment, and the information contained within will differ from cancer to cancer. For example, the breast cancer referral specific segment will contain location information on the breast lump. The prostate will contain information on the rectal exam and so on.

This document should be provided with an accompanying construction document, specifically related to the cancer in question.

Note: This is a generic document; however, some data relates to one particular cancer to create a flow with the data, for example, RF1.3 [7.2 Referral Information Segment].

7. Message Fragments

7.1 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 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> will always be HEALTHLINKONLINE.

The receiving facility <MSH.6> is the specialist cancer centre, 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 medical council number.

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;</MSH.2>
                <MSH.3>
                        <HD.1>HELIXPM.HEALTHLINK.20</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>HEALTHLINKONLINE</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>20090401103136</TS.1>
        </MSH.7>
        <MSH.9>
            <MSG.1>REF</MSG.1>
            <MSG.2>I12</MSG.2>
        </MSH.9>
        <MSH.10>REF200904011620543564</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>
```

7.2 Referral Information Segment

Indicates that this referral is pending, has an urgent priority, is a prostate cancer referral, has a reference number of 10008 assigned by the practice software system and was generated on 1st April 2009.

```
<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>Prostate</CE.1>
            <CE.2>Prostate</CE.2>
            <CE.3>L</CE.3>
        </RF1.3>
```

```
            <RF1.6>
                  <EI.1>10008</EI.1>
            </RF1.6>
            <RF1.7>
                  <TS.1>20090401103136</TS.1>
            </RF1.7>
</RF1>
```

7.3 Provider Data Segment

PRD.1 is the Provider Role, PP for primary care provider or GP referring the patient and RT for the referred to provider, or the consultant in the cancer specialist centre. The PRD segment is repeated, first for the primary care provider and then for the referred to provider.

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

PRD.5 is a repeatable field for phone numbers and email addresses. Use HL7 table 0201 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 referring GP:

```
      <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>Test 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>Test Practice</PL.1>
                  </PRD.4>
```

```
                <PRD.5>
                    <XTN.1>053 4366066</XTN.1>
                    <XTN.2>WPN</XTN.2>
                    <XTN.3>PH</XTN.3>
                </PRD.5>
                <PRD.5>
                    <XTN.1>053 4389066</XTN.1>
                    <XTN.2>EMR</XTN.2>
                    <XTN.3>CP</XTN.3>
                </PRD.5>
                <PRD.5>
                    <XTN.1>012342333</XTN.1>
                    <XTN.2>WPN</XTN.2>
                    <XTN.3>FX</XTN.3>
                </PRD.5>
                <PRD.5>
                    <XTN.1>testpractice@test.com</XTN.1>
                    <XTN.2>NET</XTN.2>
                    <XTN.3>Internet</XTN.3>
                </PRD.5>
                <PRD.7>
                    <PI.1>12345</PI.1>
                </PRD.7>
            </PRD>
        </REF_I12.PROVIDER_CONTACT>
```

Here is the second provider data segment for the referred to provider, in this example, the consultant urologist:

```
<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>Lynch</FN.1>
                    </XPN.1>
                    <XPN.2>Thomas</XPN.2>
                    <XPN.5>MR</XPN.5>
                    <XPN.6>MB</XPN.6>
                </PRD.2>
                <PRD.3>
                    <XAD.1>
                        <SAD.1> Urology Department</SAD.1>
                    </XAD.1>
                    <XAD.2>St James Hospital</XAD.2>
                    <XAD.3>Dublin 8</XAD.3>
                    <XAD.4/>
```

```
            </PRD.3>
            <PRD.4>
                <PL.1>Urology Department</PL.1>
            </PRD.4>
            <PRD.5>
                <XTN.1>01 4103854</XTN.1>
                <XTN.2>WPN</XTN.2>
                <XTN.3>PH</XTN.3>
            </PRD.5>
            <PRD.7>
                <PI.1>56789</PI.1>
            </PRD.7>
        </PRD>
    </REF_I12.PROVIDER_CONTACT>
```

7.4 Patient Identification Segment

```
    <PID>
        <PID.3>
            <CX.1>Z08483595</CX.1>
            <CX.4>
                <HD.1>Healthlink</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>
```

7.5 History General Segments

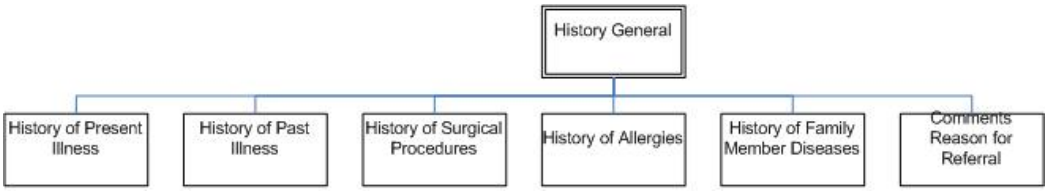

Figure 4 OBX segments for History General OBX

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.

```
<REF_I12.OBSERVATION>
            <OBR>
                  <OBR.1>1</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>11329-0</CE.1>
                        <CE.2>History General</CE.2>
                        <CE.3>LN</CE.3>
                  </OBR.4>
                  <OBR.7>
                        <TS.1>20090401</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>10164-2</CE.1>
```

```
                    <CE.2>History of present illness</CE.2>
                    <CE.3>LN</CE.3>
                </OBX.3>
                <OBX.5>Nocturia for the last 6 months. Frequency,
                poor stream. Back pain intermittently for last 6 weeks
                </OBX.5>
                <OBX.6/>
                <OBX.7/>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14>
                    <TS.1>20090401</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>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>20090401</TS.1>
                </OBX.14>
            </OBX>
        </REF_I12.RESULTS_NOTES>
        <REF_I12.RESULTS_NOTES>
            <OBX>
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                <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>20090401</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>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>20090401</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>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>20090401</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>X0008-0</CE.1>
```

```
                    <CE.2>Comments Reason for Referral</CE.2>
                    <CE.3>L</CE.3>
                </OBX.3>
                <OBX.5>Request for urgent review. I am concerned
                that this is advanced prostatic carcinoma.</OBX.5>
                <OBX.6/>
                <OBX.7/>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14>
                    <TS.1>20090401</TS.1>
                </OBX.14>
            </OBX>
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    </REF_I12.OBSERVATION>
```

7.6 Social History Segments

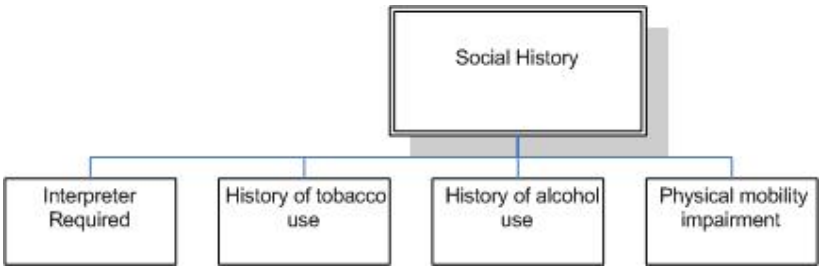

Figure 5 OBX segments for Social History OBR

If the patient uses cigarettes or alcohol, then a subsequent OBX segment indicates how many cigarettes per day or units of alcohol per week are consumed.

```
<REF_I12.OBSERVATION>
        <OBR>
            <OBR.1>1</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>29762-2</CE.1>
                <CE.2>Social History</CE.2>
                <CE.3>LN</CE.3>
            </OBR.4>
            <OBR.7>
                <TS.1>20090401</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>20090401</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>20090401</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>No</OBX.5>
                <OBX.6/>
                <OBX.7/>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14>
                    <TS.1>20090401</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>20090401</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>20090401</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>20090401</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>20090401</TS.1>
                    </OBX.14>
                </OBX>
        </REF_I12.RESULTS_NOTES>
        </REF_I12.OBSERVATION>
```

7.7 Clinical Examination Segments

This contains general information on clinical examination findings. It should be mapped to 'Other clinical examination' from the user interface, for example, examination of heart, lungs, abdomen, pulse and blood pressure. There may not be a need for this section in certain referrals. Specific information for specific cancer types is contained in the cancer specific segment. Thus this segment can be used across all cancer referral types.

Here are some useful LOINC codes:

Text	LOINC code
Blood Pressure	18684-1
Pulse	8893-0

Table 13 LOINC codes for Pulse & Blood Pressure

```
<REF_I12.OBSERVATION>
        <OBR>
            <OBR.1>3</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>22029-3</CE.1>
                <CE.2>Physical exam.total</CE.2>
                <CE.3>LN</CE.3>
            </OBR.4>
            <OBR.7>
                <TS.1>20090401</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>20090401</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>18684-1</CE.1>
                    <CE.2>Blood pressure</CE.2>
                    <CE.3>LN</CE.3>
                </OBX.3>
                <OBX.5>140/90</OBX.5>
                <OBX.6/>
                <OBX.7/>
                <OBX.8/>
                <OBX.11>F</OBX.11>
                <OBX.14>
                    <TS.1>20090401</TS.1>
                </OBX.14>
            </OBX>
        </REF_I12.RESULTS_NOTES>
    </REF_I12.OBSERVATION>
```

7.8 Laboratory Studies Segments

This segment provides laboratory test results. Specific tests may be sought for the specific cancer type or it may contain more general test results. The referring GP also be able to include other relevant test results that he or she feels are relevant.

```
<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>
            <OBX>
                <OBX.1>1</OBX.1>
                <OBX.2>FT</OBX.2>
```

```
                    <OBX.3>
                        <CE.1>26436-6</CE.1>
                        <CE.2>Laboratory Studies</CE.2>
                        <CE.3>LN</CE.3>
                    </OBX.3>
                    <OBX.5> Hb13.5g%, LFTs normal </OBX.5>
                    <OBX.11>F</OBX.11>
                    <OBX.14>
                        <TS.1>200903111600</TS.1>
                    </OBX.14>
                </OBX>
            </REF_I12.RESULTS_NOTES>
        </REF_I12.OBSERVATION>
```

7.9 Radiology Study Reports Segments

This provides information on Xray, Ultrasound, CT Scan and MRI reports. The referring GP should be able to include relevant imaging results.

```
<REF_I12.OBSERVATION>
        <OBR>
            <OBR.1>5</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>
            <OBX>
                <OBX.1>1</OBX.1>
                <OBX.2>TX</OBX.2>
                <OBX.3>
                    <CE.1>18726-0</CE.1>
                    <CE.2>Radiology Study Reports</CE.2>
                    <CE.3>LN</CE.3>
                </OBX.3>
                <OBX.5>Abdominal ultrasound normal</OBX.5>
                <OBX.11>F</OBX.11>
                <OBX.14>
                    <TS.1>20090401</TS.1>
```

```
                    </OBX.14>
                </OBX>
            </REF_I12.RESULTS_NOTES>
        </REF_I12.OBSERVATION>
```

7.10 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.

```
<REF_I12.OBSERVATION>
    <OBR>
        <OBR.1>1</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>19009-0</CE.1>
            <CE.2>Current Medication</CE.2>
            <CE.3>LN</CE.3>/>
        </OBR.4>
        <OBR.7>
            <TS.1>20090401</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>20090401</TS.1>
```

```
            </OBX.14>
        </OBX>
        </REF_I12.RESULTS_NOTES>
        <REF_I12.RESULTS_NOTES>
        <OBX>
            <OBX.1>1</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>20090401</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>Propranolol 10mg tds</OBX.5>
            <OBX.11>F</OBX.11>
            <OBX.14>
                <TS.1>20090401</TS.1>
            </OBX.14>
        </OBX>
        </REF_I12.RESULTS_NOTES>
</REF_I12.OBSERVATION>
```

7.11 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>
```

8. 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

Table 14 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

Table 15 Code table for Message Type IDs

<MSH.6> Receiving Facility

Populated via Web Services.

Specialist Cancer Centre	Code

Table 16 Code table for Specialist Cancer Centres

<MSH.11> Processing ID

Description	Code
Debugging	D
Production	P
Training	T

Table 17 HL7 Table 0103 - Processing ID

<RF1.1> Referral Status

Description	Code
Accepted	A
Pending	P
Rejected	R
Expired	E

Table 18 User-defined Table 0283 – Referral status

<RF1.2> Referral Priority

Description	Code
Urgent	U
Early	E
Routine	R

Table 19 User-defined Table 0280 - Referral priority

<RF1.3> Referral Type

Description	Code
Prostate	Prostate
Breast	Breast
Lung	Lung

Table 20 Referral Type

<PRD.1> Provider Role

Description	Code
Primary Care Provider	PP
Referred To Provider	RT

Table 21 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 22 HL7 Table 0201 – Telecommunication Use Code

<PV1.15> Ambulatory Status

Description	Code
B6	Pregnant
B7	Not Pregnant
B8	Pregnancy 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