

# National Cervical Screening Programme-Register Implementation Guide

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**To provide guidance on forming HL7 version 2.4,  
messages for laboratory results and reporting  
specialist visits, including message transport  
options using Web Services and alternate media**

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## Related Documents

The documents listed below have been referred to in the development of this guide. They may provide clarification of this guide, if required.

### Relevant Standards

HISO: 10011.1 Referrals, Status, and Discharge Business Process. Wellington: Ministry of Health, 2007

HISO: 10011.2 Referrals, Status, and Discharge Messaging Standard. Wellington: Ministry of Health, 2007

HISO: 10011.3 Referrals, Status, and Discharge Implementation Guide. Wellington: Ministry of Health, 2007

HISO: 10008.1 Pathology and Radiology Messaging Standard. Wellington: Ministry of Health, 2007

HISO: 10008.2 Pathology and Radiology Implementation Guide. Wellington: Ministry of Health, 2007

Health Level Seven Inc., HL7 Standard version 2.4 - An Application Protocol For Electronic Data Exchange in Healthcare Environments

HISO: 10005 HPI Data Set. Wellington: Ministry of Health, 2004

HISO: 10006 HPI Code Set. Wellington: Ministry of Health, 2004

### ISO

ISO 3166: ISO 3166-1:1997 Codes for the representation of names of countries and their subdivisions - Part 1: Country Codes

### Other Publications

SNZ HB 8169:2002 Health Network Code of Practice (Amendment 1 2006)  
Health Information Privacy Code 1994

Ministry of Health, Health Intranet standards  
<http://www.hin.moh.govt.nz/pages/standards.htm>

WS Security Core Specification (<http://www.oasis-open.org/committees/download.php/16790/wss-v1.1-spec-os-SOAPMessageSecurity.pdf>)

Core Security Patterns  
Christopher Steel, Ramesh Nagappan, Ray Lai  
Prentice Hall, 2006

WS Addressing Standard (Recommendation)  
<http://www.w3.org/TR/2006/REC-ws-addr-core-20060509/>

# 1 INTRODUCTION

## 1.1 Overview

The National Screening Unit (“NSU”) is a separate unit within the Health and Disability National Services Directorate of the Ministry of Health. The NSU has developed a clear vision for the future:

***“Saving lives, reducing inequalities, and building the nation’s health by leading the delivery of screening programmes, uncompromising in their quality, and trusted by the communities we serve”.***

The NSU is responsible for carrying out all the required national functions of the two national cancer-screening programmes – the National Cervical Screening Programme (NCSP) and BreastScreen Aotearoa. Recently the NSU became responsible for the national functions of the Newborn Metabolic Screening Programme and the rollout of the Antenatal HIV screening and the Universal Newborn Hearing Screening Programme. The NSU also has a wider role with respect to other screening (strategic screening), including the provision of strategy and policy advice, and establishment of new programmes where appropriate.

The NCSP was established in 1990 to reduce the incidence and mortality rate of cervical cancer through a nation-wide ongoing organised screening programme that would detect pre-cancerous changes to the cervix. The scope of the NCSP includes health promotion, smear-taking services including recall and referral, laboratory services including reading of all cervical cytology and histology samples and HPV testing, colposcopy services including biopsy and treatment of pre-cancerous lesions, national management and co-ordination, regional co-ordination, information management, and evaluation.

More information on the NSU can be found at [www.nsu.govt.nz](http://www.nsu.govt.nz)

## 1.2 Background

The NSU has been working on a project for the last 24 months to re-develop the existing National Cervical Screening Programme Register (NCSPR). The first major steps to implement the redevelopment of the NCSP-Register is now underway. RHE & Associates (RHE) in consortium with Medtech Global Ltd and Red Rock Consulting Ltd are undertaking the redevelopment work and the project is moving into the final stages of testing and transition.

The existing Register was based on old technology and required considerable manual intervention to operate. External access and/or data entry to the NCSP information systems has been generally through manual requests/provision of floppy disks to NCSP-Register data entry or NSU system administration staff. Note that online access for laboratories to the NCSP-Register for smear history information was recently implemented with some laboratories.

The NSU has identified a number of areas where significant benefits can be achieved by implementing a system with new technologies. These include:

- Integration with provider systems;
- Greater integrity of data from point of data entry to the NCSP-Register through implementation of data quality checks at source;
- Elimination of multiple and manual points of data entry and re-entry;
- Secure web-based access to a woman’s cervical screening history by authorised NCSP Providers;
- Streamlined interfaces with the National Cancer Registry, the National Health Index and the (future) Health Practitioner Index;
- Use of centralised data repository for reporting services for NCSP Providers;
- Support for web-based access.

The NSU are also changing their current operating model and introducing processes that will support their strategic objectives for the future. This change of service model will be introduced in parallel to the NCSRP project although some of the initiatives may be introduced through future phases of the new system.

The strategic initiatives that the system must support for Phase 1 are as follows:

- A single Register that supports all aspects of the Cervical Screening Workflow.
- Web Services interface that will support the exchange of HL7 transactions with Laboratories and Colposcopists. (This will be extended to Smear Takers during Phase II)
- The ability to manage and maintain the underlying data through web pages and HL7 transactions comprising:
  - Participants (Women) and their enrolments.
  - Participant Demographic Details (Names, DOB, Addresses, NHI etc).
  - Organisations, Facilities and Practitioners, Addresses, Contacts.,
  - Geo Coding of all addresses and maintenance of the relationship with Geographical Areas for reporting and statistical analysis.
  - Communications and letter templates.
  - Screening Events (Enrolment, Withdrawal, Tests, Results, Treatments).
  - Validate the integrity of results and the Bethesda, Snomed coding system and the Guidelines for Cervical Screening in New Zealand, 2008.
  - Analyse screening data in accordance with the NCSP Operational Policy and Quality Standards.
  - Analyse data by aggregating information up to District Health Board or other geographical, demographical groupings.
- Interfaces to enable exchange of data between the new Register and other significant health registers within NZHIS:
  - National Health Index (NHI)
  - Health Practitioner Index (HPI)
  - Cancer Register
  - Mortality Register
- Comprehensive audit capability to ensure the integrity of the data and system.
- Enable the Guidelines for Cervical Screening in New Zealand, 2008 to be implemented and also cater to future changes without substantial system modification.
- Allow for the provision of internal and external web based reporting and a framework for ad-hoc queries.

The NSU has communicated these changes to the sector over the course of the project through published documents and workshops. This document provides a more detailed technical specification of the messaging and transition flat file data structures that laboratories and Colposcopists will need to implement to exchange data with the new NCSR.

### 1.3 This Document

This document is a guide for sending HL7 messages and alternative data media to the NCSP-R. It must be read in conjunction with the New Zealand Health Information Standards Organisation (HISO) implementation guides and standards listed below and available at [www.hiso.govt.nz](http://www.hiso.govt.nz).

Document Number	Document Title	Purpose
10011.1	Referrals, Status and Discharges (RSD) Business Process Standard	Describes the business process for referrals supported by the Messaging Standard

10011.2	RSD Messaging Standard	Describes the structure and content of the referral message exchanges between sender and receiver
10011.3	RSD Implementation Guide	Designed to provide assistance when implementing systems which utilise the Standards in this suite
10008.1	Pathology and Radiology Messaging Standard	Describes the structure and content of the result message exchanges between sender and receiver
10008.2	Pathology and Radiology Implementation Guide	Designed to provide assistance when implementing systems which utilise the Standards in this suite

**Table 1: Related Documents**

The above suite of Standards is based on Health Level Seven (HL7) version 2.4.

The messages covered are:

- Provision of lab results by laboratories
- Requests for and the provision of screening histories
- The provision of referral and visit information by specialists.

This guide covers the following topics:

- Specific use of message segments where there are alternative uses and the enforcement of optional fields that are required for the register.
- The provision of specific codes and code sets that are used by the NCSP-R.
- Description of the web services provided by the NCSP-R and how they may be used to exchange HL7 messages with the NCSP-R.
- Provision of all the technical information required for a Health Provider (or their system vendor) to make all of the necessary system changes to support the NCSP-R web services
- The file layouts for sending data using an alternative media source.

## **1.4 Exchanging Information with the NCSP Register**

### *Communications with Specialists using HL7 Messaging*

The NSU will be implementing the HL7 standard for Referrals, Status and Discharges version 2.4. This means that the following transactions can be generated from within their clinical system and the messages sent to the NCSP-R removing the need to complete and send paper form transactions.

- Referral Status – notification of receipt
- Referral Status – appointment data
- Referral Status – “Did not attend”
- Clinical Update – Relevant clinical notes from an examination
- Discharge summary.

### *Specialist Web Interface*

A series of secure web forms will also be provided to enable Specialists to complete the submission of patient visit information to the NCSP-R in cases where the information systems are unable to exchange this data via HL7. A user guide and training package for these web forms will be provided by the NSU.

### *Communications with Laboratories using HL7 Messaging*

The NSU will be adopting the new HL7 Pathology messaging standard (version 2.4) and is also working with the HISO expert committee through its reference group and some of the project team to ensure the standard will provide the optimal vehicle for the transmission of results to the NCSP-R and the provision of histories in return. These enhanced messages will have the capacity to send:

- Demographic information.
- Details of the patient visit giving rise to the diagnostic request.
- Cytology and Histology Test Results.

The majority of laboratories (if not all) are already sending HL7 messages to the requestor of laboratory services so it is seen as a natural progression to move to the updated standard. This document provides an implementers guide to adopting this messaging standard for the NCSP-R.

### *Reporting Additional Information using HL7 Messaging*

The NSU will also record additional medical information such as exposure to DES and HPV status. This information can be conveyed in either RSD or Result messages using a miscellaneous set of codes described in section 4:

### *Automated Screening Histories using HL7 Messaging*

The HL7 v2.4 messaging standard provides for the sending of a query message and the receipt of a screening history in return. Should the laboratories choose to, they could enhance their specimen registration business process and system module to generate the query messages as part of the registration. The screening histories can then be returned as PDF images or as component HL7 messages that can be processed by the Laboratory system. The current PDF formatted screening history will be an option that the labs can also select.

### *Web Services Interface for Transferring HL7 Messages*

This section describes the use of a Web Services Interface (WSI) to send and receive HL7 messages over the Health Intranet. It covers the interface, encryption, digital certificates and the required technical environment

### *Disk Submission of Cytology and Histology results*

The NCSP-R intends to phase out the current method of result submissions to the Register via floppy disk. After seeking feedback from laboratories on this change the NCSP will continue to accept results via disks for an interim period which is yet to be specified. During that time, the existing disk based file formats will be accepted, however a new disk based format has been devised and is the preferred interim data format. As there are some changes necessary to the disk based file format the coordination of when laboratory systems are modified and the launch of the new Register is of critical importance. The new disk based file formats are also contained within section 7 of this implementation guide.. A summary of the changes are outlined in section 8.

## **1.5 Business Rules**

In some sections a list of business rules is provided that are applicable to the contents of the message discussed in the section. Where a reference ID is supplied for a rule and is formatted as "NSUBR-xxx", then it is a copy of a business rule used internally by the NSU. The reference ID should be used when contacting the NSU to discuss a rule.

Please note that as these are copies of rules used internally by the NSU, they may have changed since the release of this document and the NSU should be contacted where there is concern over a rule.

## 2 COMMUNICATIONS WITH SPECIALISTS USING HL7 MESSAGING

### 2.1 General Considerations

This section must be read in conjunction with the following documents published by HISO.

- Referrals, Status and Discharges (RSD) Business Process Standard
- RSD Messaging Standard
- RSD Implementation Guide

The following events will be reported to the NCSP-R using the Referrals, Status and Discharge messaging standard.

- Acceptance/Rejection of a Referral
- Allocation/Cancellation of an appointment
- Visit outcomes
- Reporting "Did not attend" (DNA)
- Discharge Summaries.

Most of these processes are described in the RSD implementation guide and the remainder in section 2.2. Section 2.2 describes some processes that are specific to the NCSP-R and the code sets to be used can be found in section 2.3.

The NCSP-R should be sent RSD messages of the types described in Table 2 below. These will typically be copies of the RSD messages flowing between health care organisations. There are other RSD types that may be passed between organisations in relation to a Participant's care, those additional messages, not included in the table, should not be copied to the NCSP-R.

The NCSP-R will accept and track notifications of

- Referral to a specialist
- A visit to a specialist
- Transfer of care from one provider/facility to another

Value	Description
DRF	A Discharge Referral gives notification that a Participant has been forward-referred to another Care Giver, e.g. from a colposcopist to an oncologist and may contain visit information.
DIS	Discharge Summary may contain visit details from a specialist visit event and also acts as a referral back to a Care Giver from the specialist, e.g. the original smear-taker.
GRF, MED	General Referral and Medical Referral, notify of a Participant being referred to a specialist, e.g. colposcopist or oncologist, from regular Care Giver or smear-taker.
DNA	Notification from 'referred-to' provider, that the Participant did not attend the appointment.
APT	Appointment information is sent to interested parties when the 'referred-to' service provider has made an appointment for the Participant. In the context of the register this will be notification of a rescheduled appointment, following a DNA or cancellation of a previous appointment.
NOT, SRP	Notification and Status Report messages contain details of a patient event which has occurred. In the context of the NCSP-R these messages are a notification from a specialist back to the referring Care Giver, on completion of a Participant event such as a visit to the specialist.

**Table 2: Message Types**

The following table show the relationship between the types of events that occur or information being reported and the message types that convey the information.

NCSP-R Event Type	Message Type									
	ORU	Referral (for treatment)	Referral Deletion	Discharge Referral	Discharge Summary	Assume Management (transfer)	Colp. Visit	Cancel Visit	DNA	Appointment
Cytology Test Result	yes	-	-	-	-	-	-	-	-	-
Histology Test Result	yes	-	-	-	-	-	-	-	-	-
HPV Test Result	yes	-	-	-	-	-	-	-	-	-
HPV Vaccination	yes	yes	-	yes	yes	yes	yes	#	#	#
Pregnancy	yes	yes	-	yes	yes	yes	yes	#	#	#
Exposure to DES	yes	yes	-	yes	yes	yes	yes	#	#	#
No exposure to DES	yes	yes	-	yes	yes	yes	yes	#	#	#
Immunosuppressed State	yes	yes	-	yes	yes	yes	yes	#	#	#
No Immunosuppression	yes	yes	-	yes	yes	yes	yes	#	#	#
Total Hysterectomy	-	yes	-	yes	yes	yes	yes	#	#	#
Subtotal Hysterectomy	-	yes	-	yes	yes	yes	yes	#	#	#
Referral (Treatment)	-	yes	yes	-	-	-	-	-	-	-
Referral (Discharge)	-	-	yes	-	yes	-	-	-	-	-
Referral (Transfer)	-	-	yes	yes	-	yes	-	-	-	-
Visit	-	-	-	yes	yes	-	yes	yes	-	-
DNA	-	-	-	-	-	-	-	-	yes	U

**Table 3: Message Relationships**

Key	
yes	- create/update/delete, except where business rules state otherwise
-	- create/update/delete not allowed
U	- update to existing event only
#	-supported but not normally expected

## 2.2 Additional Processes

The RSD implementation guide published by HISO does not cover some situations particularly the cases where messages have been sent in error and need correcting. Supplementary information is also provided on how to convey appointment information. In all cases where it involves an update or cancellation then the referral number and facility code must be the same as the original.

### 2.2.1 Did Not Attend Correction

In this scenario it has been incorrectly reported that the patient did not attend for an appointment: This message is the equivalent of the “DNA” but the RF1-1 in the request message is “C” for cancelled. The visit information (PV2-8) must be the same as the original DNA message. Refer to Table 10. If a DNA cancellation message has not been received but a subsequent message is received containing visit information for the same appointment time then the cancellation of the DNA can be inferred if it has the same referral number and is from the same facility..

	MSH-9	RF1-1	RF1-3	RF1-4	Containing Clinical Data
Event	REF^I12	C	DNA	--	Yes
Response	RR^I^12	A		--	No

**Table 4: Did Not Attend Cancellation Sequence**

### 2.2.2 Future Appointment Information

In this scenario a referral has been accepted and an appointment has been made. This information is conveyed back to the referrer for their information in a status message but with a type of APT so it is not confused with information about a visit that has occurred. Normally this is only for information as the appointment would have been made directly with the patient. The register will only process this information if it is an appointment being made to reschedule a DNA.

	MSH-9	RF1-1	RF1-3	RF1-4	Containing Clinical Data
Event	REF^I12	A	APT	--	Yes
Response	RR^I^12	A		--	No

**Table 5: Appointment Detail Sequence**

### 2.2.3 Cancel Future Appointment

In this scenario an appointment that has been made is now being cancelled. This information is conveyed back to the referrer for their information in a status message with a type of APT so it is not confused with information about a visit that has occurred, but the RF1-1 in the message is “C” for cancelled. Normally this is only for information as the appointment would have been made directly with the patient. The visit information (PV2-8) must be the same as the original appointment message.

	MSH-9	RF1-1	RF1-3	RF1-4	Containing Clinical Data
Event	REF^I12	C	APT	--	Yes
Response	RR^I12	A		--	No

**Table 6: Appointment Cancellation Sequence**

### 2.2.4 Cancel Status Update

In this scenario incorrect information has been sent in a status message. This can only be cancelled if it can be identified by it being associated with an appointment as there would only be one status update for an appointment. The visit information (PV1-44) must be the same as the original status message.

	MSH-9	RF1-1	RF1-3	RF1-4	Containing Clinical Data
Event	REF^I12	C	SRP	--	Yes
Response	RR^I12	A		--	No

**Table 7: Status Message Cancellation Sequence**

### 2.2.5 Permitted Amendment Messages

There is no provision to amend the initial referral or the subsequent discharge summary as they are too complex to identify the items that need changing. These need to be cancelled and new ones resent. However in the case of a status message that reports a visit or a DNA then it is feasible to make minor amendments such as the DNA reason. If the visit information (PV1-44 for visits that have occurred or PV2-8 for visits that were planned) is identical to the original status message then the reported information can replace that previously reported.

### 2.2.6 Clarification of Appointment Date Fields

If reporting an event that has not happened such as a future appointment or a DNA then the date is carried in PV2-8 segment. If the event has occurred then the visit date that is being reported is carried in the PV1-44 segment. In the case of the original referral the date reported is the date of the appointment that gave rise to the referral and not a suggested appointment date.

### 2.2.7 Variation to the Standard

As most messages to the NCSP-R are copies of messages the original recipient is lost from the message header. Furthermore the message header does not use HPI codes. For this reason all messages must have values in the Provider Identifier fields (PRD-7). These identifiers must include the Common Person Number (CPN) and the facility code. The facility codes must be provided for both the referrer and the facility referred to. There must be a PRD segment for the referrer and the referred to provider in all REF messages. All required provider fields must use either a HPI or NSU code, and additionally may use an HCM code for Health Practitioners.

Of all CE and XCN field types that are used by the Register, only the identifier and coding system/assigning authority sub-components are used. The text sub-component within CE field types is ignored and so are all name sub-components within the XCN field types. If the identifier for a health worker or health facility is not known, a table is provided at the end of this document with a list of identifiers in use by the Register.

NCSP-R requires that the referral type (RF1-3) must contain a value.

NCSP-R requires that the referral date (RF1-7) must contain a value when it is the actual Referral, discharge or transfer. In other words it is optional for visit information.

Each message must only have one participant (PID) per message (MSH). This does not preclude a stream of messages with different participants being sent at the same time.

All "dates" are required to be a complete date and time even though the standard allows for dates only

It is implied in general by the HL7 standards that non repeating fields can be repeated by local agreement. The NCSP-R will not only ignore additional repeats but will reject the message as being in error.

The Register supports ASCII and UNICODE and any value in MSH-18 will be ignored.

Where multiple results are to be reported in OBX segments, each individual result should be reported in separate OBX segments, rather than as repeats of OBX-5, even if they are for the same result type. For example, where more than one action was taken during a Colposcopy visit, those actions should be included in separate OBX segments. Multiple alternate identifiers for the same result are allowed as repeats in OBX-5, so long as exactly one uses a coding system supported by the NCSP-R.

Table 135 in the RSD standard is a user defined table for PV1-2 (Patient Class) and has the additional value of D (day Case) for reporting to the NCSP-R. However it is recommended that the value of I (Inpatient) is used and reliance is placed on PV1-44 (admit date) and PV1-45 (discharge date) to indicate a Day Case.

Table 85 in the RSD standard is a user defined table for NTE-4 (Comment Type). The NCSP-R defines an additional value of OC (Optional Clarification) for reporting clarification of code-values such as for OTHER booking priority or OTHER method of referral. In some cases this clarification text is mandatory.

### **2.2.8** *Known errors in Version 1.0 of RSD Implementation Guide*

Section 4.1.1: RF1-4 is only AM if the patient is not expected back otherwise should be RP

Section 4.2.1: RF1-4 is only AM if the patient is not expected back otherwise should be RP

Section 4.2.2: RF1-1 is only C and RF1-4 AM only if the DNA results in a returning management of the patient to the referrer otherwise the values are A and FI respectively if another appointment is to be scheduled.

Section 4.4: All references to I12 should be I14

## **2.3 Reporting Event Information**

Some Referral, Visit and DNA information is reported in one or both of two sets of OBC/OBR/OBX segments. Where supplied in OBX segments, reported event elements are included by supplying OBX-5 values from code tables as listed in the sections below. Code tables starting with "99NZ" are custom for NCSP-R and are listed in section 2.3.6.

Visit and most discharge information is stored in OBC/OBR/OBX segments with an OBR-4 of 21976-6 (LOINC) "Cancer Outcome Status". The following table lists the fields that must have values supplied for them in addition to those fields mandatory by HL7 specification. Recommended values are also supplied.

Segment	Field	Recommended Value
ORC	1	'IN'
	2	same as RF1-6
	12	Health Practitioner. Ignored by the Register, but required to satisfy HL7 specifications.
OBR	2	same as RF1-6
	4	21976-6^Cancer Outcome Status^LN
	7	same as RF1-7
	14	same as RF1-7
	16	Health Practitioner identifier. Ignored by the Register, but required to satisfy HL7 specifications.
	25	'F'
	46	not required, ignored by the Register
	47	not required, ignored by the Register
OBX	2	'CE'
	3	21976-6^Cancer Outcome Status^LN
	5	result data
	11	'F'

**Table 8: Required fields for Cancer Outcome Status Segments**

Referral and some discharge information is stored in OBC/OBR/OBX segments with an OBR-4 of 21978-2 (LOINC) "Source of Follow-up Information". The following table lists the fields that must have values supplied for them in addition to those fields mandatory by HL7 specification. Recommended values are also supplied.

Segment	Field	Recommended Value
ORC	1	'IN'
	2	same as RF1-6
	12	Health Practitioner identifier. Ignored by the Register, but required to satisfy HL7 specifications.
OBR	2	same as RF1-6
	4	21978-2^Source of Follow-up Information^LN
	7	same as RF1-7
	14	same as RF1-7
	16	Health Practitioner identifier. Ignored by the Register, but required to satisfy HL7 specifications.
	25	'F'
	46	not required, ignored by the Register
	47	not required, ignored by the Register
OBX	2	'CE'

	3	21978-2^Source of Follow-up Information^LN
	5	result data
	11	'F'

**Table 9: Required fields for Source of Follow-up Information Segments**

### 2.3.1 Reporting Referrals for Treatment and Transfers (Assume Management)

Referral requests are not to be sent to the Register. Referrals should be notified to the Register once accepted.

Reported event elements for Accepted Referrals for Treatment and Transfers (Assume Management) are included as listed in the table below.

Element	Cardinality / Optionality	Message Field
Referred To Facility	1 is mandatory	PRD(RT)-7 (see business rule NSUBR-564 in section 2.3.7)
Referred By Facility	1 is mandatory	PRD(RP)-7 (see NSUBR-562)
Referred To Health Practitioner	1 is optional	PRD(RT)-7 (see NSUBR-563)
Referred By Health Practitioner	1 is mandatory	PRD(RP)-7 (see NSUBR-561)
Referral Accepted Date	1 is mandatory	RF1-7 (see NSUBR-5220)
Referral Status	mandatory, must be 'A'	RF1-1 (see NSUBR-818)
Referral Number	1 is mandatory	RF1-6
Colposcopy/Oncology Booking Priority	1 is conditionally mandatory/ not allowed	DG1 segment having DG1-3 from 99NZCOLPPRIORITY table (see NSUBR-264, NSUBR-300)
Booking Priority Clarification	1 or more, conditionally mandatory/ optional	NTE segments following DG1 segment with Booking Priority code. NTE-4 comment type code must be OC. (see NSUBR-816)
Data Colposcopy Referral Received	1 is mandatory	Include in RF1-7.
General Diagnosis Notes	1 or more, optional	NTE segments following DG1 segment with Booking Priority code, having any NTE-4 comment type code other than OC
Method of Referral	1 is optional	OBX segment having OBX-5 from code system 99NZREFMED
Method of Referral Clarification	1 or more, conditionally mandatory/ optional	NTE segments following OBX segment with Method of Referral code. NTE-4 comment type code must be OC. (see NSUBR-817)

Follow-up Timeframe	1 is optional	OBX segment having OBX-5 from code system 99NZCOLPFLWTIME (see NSUBR-265, NSUBR-819)
---------------------	---------------	--

**Table 10: Reported Fields for Treatment Referrals and Transfers**

*Note: all OBX data in "Source of Follow-Up Information" OBR*

Referrals for Treatment, Transfers, Discharge Summaries and Discharge Referrals are deleted by supplying a message of type REF^14. The following fields are required in order to identify the referral being cancelled, and no additional information is stored by the Register:

Element	Cardinality / Optionality	Message Field
Referred To Facility	1 is mandatory	PRD(RT)-7
Referred By Facility	1 is mandatory	PRD(RP)-7
Referral Number	1 is mandatory	RF1-6

**Table 11: Fields required for Referral Deletion**

### 2.3.2 Reporting Discharges without Visits

Discharge Summaries and Discharge Referrals that are sent without Visit information do not include a PV1 segment and include limited information within the Cancer Outcome Status OBR.

Reported event elements for discharges included as listed below:

Element	Cardinality / Optionality	Message Field
Referred To Facility	1 is mandatory	PRD(RT)-7 (see NSUBR-564)
Referred By Facility	1 is mandatory	PRD(RP)-7 (see NSUBR-562)
Referred To Health Practitioner	1 is mandatory	PRD(RT)-7 (see NSUBR-563)
Referred By Health Practitioner	1 is mandatory	PRD(RP)-7 (see NSUBR-561)
Referral Accepted Date	1 is mandatory	RF1-7 (see NSUBR-220)
Referral Status	mandatory, must be 'A'	RF1-1 (see NSUBR-818)
Method of Referral	1 is optional	OBX <sup>2</sup> segment having OBX-5 from code system 99NZREFMED
Method of Referral Clarification	1 or more, conditionally mandatory/ optional	NTE segments following OBX segment with Method of Referral code. NTE-4 comment type code must be OC. (see NSUBR-817)
Recommended Follow-up Type	1 is optional	OBX <sup>1</sup> segment having OBX-5 from code system 99NZCOLPFLWUP
Follow-up Timeframe	1 is optional	OBX <sup>1</sup> segment having OBX-5 from code system 99NZCOLPFLWTIME

**Table 12: Reported Fields for Discharges without Visit Information**

*Note 1: all OBX data except Method of Referral in "Cancer Outcome Status" OBR*

### 2.3.3 Reporting Visits

Visit information can be included in Status Report, Notification, Discharge Summary and Discharge Referral messages. A message is considered to be for a visit if it contains a PV1 segment. For Status Report and Notification messages the PV1 segment is mandatory.

Reported elements should be included as listed below:

Element	Cardinality / Optionality	Message Field
Referred To Facility	1 is mandatory	PRD(RT)-7 (see NSUBR-699, NSUBR-815)
Referred By Facility	1 is mandatory	PRD(RP)-7 (see NSUBR-815)
Referred To Health Practitioner	1 is mandatory if status report or notification message, optional otherwise	PRD(RT)-7 (see NSUBR-698)
Referred By Health Practitioner	1 is mandatory if discharge message, ignored otherwise	PRD(RP)-7 (see NSUBR-698)
Referral Accepted Date	mandatory if discharge	RF1-7 (see NSUBR-220)
Referral Status	mandatory if discharge, must be 'A'	RF1-1 (see NSUBR-818)
Referral Number	1 is mandatory	RF1-6
Visit Date	1 is mandatory	PV1-44 (see NSUBR-303, NSUBR-403)
Admission Type (called Patient Class in HL7 specification)	1 is mandatory	PV1-2 (see NSUBR-378)
Specimen Site	1 is conditionally mandatory	Include in OBX segment having the OBX-3 and OBX-5 values for the Bethesda codes listed in Table 36. (see NSUBR-812 for allowed values)
Transformation Zone Visibility	1 is conditionally mandatory/ not allowed	OBX segment having OBX-5 from code system 99NZCOLPTZ (see NSUBR-379)
Colposcopic Appearance	1 is conditionally mandatory/ not allowed	OBX segment having OBX-5 from code system 99NZCOLPAPR (see NSUBR-379)
Predicted Abnormality Grade	1 or more, conditionally mandatory	OBX segment having OBX-5 from code system 99NZCOLPGRADE (see NSUBR-381)
Visit Actions	1 or more, conditionally	OBX segment having OBX-5 from code system 99NZCOLPACTION

	mandatory	(see NSUBR-697)
Visit Action Comments	1 or more, optional	NTE segments following OBR and NTE segments following OBX segments with Visit Action code.
Recommended Follow-up Type	1 is optional	OBX segment having OBX-5 from code system 99NZCOLPFLWUP
Follow-up Timeframe	1 is optional	OBX segment having OBX-5 from code system 99NZCOLPFLWTIME (see NSUBR-385, NSUBR-417)

**Table 13: Reported Fields for Visits and Discharges**

*Note: all OBX data in "Cancer Outcome Status" OBR*

Visits information is cancelled by supplying a message of type REF^I12 and RF1-1 "Referral Status" with value 'C'. Discharges are deleted according to the section above. The following fields are required in order to identify the visit being cancelled, and no additional information is stored by the Register:

Element	Cardinality / Optionality	Message Field
Referred To Facility	1 is mandatory	PRD(RT)-7
Referred By Facility	1 is mandatory	PRD(RP)-7
Referral Number	1 is mandatory	RF1-6
Visit Date	1 is mandatory	PV1-44

**Table 14: Fields required for Visit Cancellation**

### 2.3.4 Reporting DNAs and Future Appointments

DNA event information is sent in a DNA message with PV2-8 containing the date of the intended visit, and future appointment information is sent in a APT message with PV2-8 containing the date of the rescheduled appointment.

Reported elements should be included as listed below:

Element	Cardinality / Optionality	Message Field
Referred To Facility	1 is mandatory	PRD(RT)-7 (see NSUBR-699, NSUBR-815)
Referred By Facility	1 is mandatory	PRD(RP)-7 (see NSUBR-815)
Referred To Health Practitioner	1 is mandatory	PRD(RT)-7 (see NSUBR-698)
Result Status	1 is mandatory	OBR-25
Referral Number	1 is mandatory	RF1-6
Booked Appointment	1 is mandatory for DNA message	PV1-44 (see NSUBR-388)
Rescheduled Appointment Date	1 is mandatory for APT message	PV2-8 (see NSUBR-249)

Intended Visit Purpose	mandatory for DNA message	OBX segment having OBX-5 from code system 99NZCOLPPURP (see NSUBR-709)
------------------------	---------------------------	--

**Table 15: Reported Fields For DNAs and Appointments**

Note: all OBX data in "Cancer Outcome Status" OBR

DNA and appointment information is deleted by supplying a message of type REF^I12 and RF1-1 "Referral Status" with value 'C'. The following fields are required in order to identify the DNA or appointment being cancelled, and no additional information is stored by the Register:

Element	Cardinality / Optionality	Message Field
Referred To Facility	1 is mandatory	PRD(RT)-7
Referred By Facility	1 is mandatory	PRD(RP)-7
Referral Number	1 is mandatory	RF1-6
Booked Appointment	1 is mandatory for DNA message	PV1-44
Rescheduled Appointment Date	1 is mandatory for APT message	PV2-8

**Table 16: Fields required for Referral Deletion**

### 2.3.5 Reporting Errors back to Senders

Errors will be reported back to the sending organisation in an ERR segment with additional text indicating the nature of the error.

For example

```
MSH|^~\&|NCSR|NSU|Sample Lab System|Sample
Lab|200807221908||RRI^I12|463165126|P|2.4^NZL^1.0
MSA|AR|221932|The incoming message has been rejected due to an error.
ERR|OBX^10^5^103&TVN. '' not valid for 'Visit Purpose'&HL70357
RF1|A^Accepted^HL70283|R|DNA^Did not Attend^HL70281|||GEN658999|200511231456
PRD|RP^^99NZPRRL|Smith^A^^^Dr~Jones^S^^^Dr|^MidCentral
Med^Tauranga|||S13^CS~08440^CS
PRD|RT^^99NZPRRL|Oram^A^^^Dr~Dave^S^^^Dr|^North Shore Health
Centre^Auckland|||A297^CS~05646^CS
PID|1||AAB7616^^^NZLMOH||Jones^Mary||19751214|F||44|||
```

The error text is pre-pended with a three letter code relating to the HL70357 Error Condition Code as follows, codes not listed are not used by the NCSP-R:

Error Condition Code	Description	Abbreviation
100	Segment sequence error	SSE
101	Required field missing	RFM
102	Data type error	DTE
103	Table value not found	TVN
201	Unsupported event code	UEC

Error Condition Code	Description	Abbreviation
204	Unknown key identifier	UKI
205	Duplicate key identifier	DKI
207	Application internal error	AIE

**Table 17: HL70357 Error Condition Code Abbreviations**

### 2.3.6 Custom code tables specific to the NCSP-R

OBX-5 will contain values from the code tables below. The tables give the acceptable coding-system identifiers and values to be used in OBX-5 along with the NCSP-R code/description.

99NZCOLPACTION	Description
RPT	Repeat smear
REV	Review/results discussed
TRT	Arranged treatment
PCH	Punch biopsy
ELCT	Electro surgical excision of cervix
LASA	Laser ablation
LASE	Laser excision
CKNF	Cold knife cone biopsy cervix
HYST	Total hysterectomy
OTHR	Other
HPV	HPV
SUBH	Sub total hysterectomy

**Table 18: 99NZCOLPACTION Colposcopy Action Type Code**

99NZCOLPAPR	Description
NRML	Normal
ABML	Abnormal
INCON	Inconclusive

**Table 19: 99NZCOLPAPR COLP Appearance Type Code**

99NZCOLPFLWTIME	Description
7D	7 days
1M	1 month
2M	2 months
4M	4 months
6M	6 months
7M	7 months

99NZCOLPFLWTIME	Description
9M	9 months
12M	12 months
18M	18 months
36M	36 months
NS	Not Stated

**Table 20: 99NZCOLPFLWTIME Follow Up Time Frame Type Code**

99NZCOLPFLWUP	Description
COLP	Colposcopist
ONCOL	Oncology services (i.e. referred)
SMT	Smear taker (i.e. discharged)
NS	Not Stated

**Table 21: 99NZCOLPFLWUP Follow Up Type Code**

99NZCOLPGRADE	Description
L	Low grade squamous
H	High grade squamous
AIS	Glandular
MCAN	Micro-invasive cancer
CAN	Invasive cancer

**Table 22: 99NZCOLPGRADE Predict Abnormal Grade Code**

99NZCOLPPRIORITY	Description
H	High Grade (includes ASC-H and HSIL)
AGUS	AGUS
QCA	?Ca
AC	Abnormal cervix - ?Ca
ACNS	Abnormal cervix – normal smear history, including current smear
AIS	AIS
OTHR	Other
LG	Low grade

**Table 23: 99NZCOLPPRIORITY – Referral Priority Type Code**

99NZCOLPPURP	Description
FSA	First specialist assessment
TRE	Treatment

FOU	Follow up
-----	-----------

**Table 24: 99NZCOLPPURP Visit Purpose Type Code**

99NZCOLPTZ	Description
COMPL	Completely
PART	Partially
NVIS	Not Visible

**Table 25: 99NZCOLPTZ Transformation Zone Type Code**

99NZREFMED	Description
PH	Phone
LTR	Letter
OTHR	Other

**Table 26: 99NZREFMED – Referral Method Type Code**

HL7 Code	Description
I	In patient
D	Day Stay
O	Outpatient

**Table 27: HL7 User defined table 0004 Patient Class**

*Note 1: There are more values in this table but they are not valid for submission to the register*

*Note 2: The code "D" should not be used but rather "I" with a length of stay of zero*

Value	Description
PI	Patient Instructions
AI	Ancillary Instructions
GI	General Instructions
1R	Primary Reason
2R	Secondary Reason
GR	General Reason
RE	Remark
DC	Duplicate/Interaction Reason
OC	Optional Code Clarification

**Table 28: HL7 User defined table 0364 Comment Type**

### 2.3.7 Business Rules

Rules applicable to processing of RSD messages containing Referral for Treatment, Discharge Summary, Discharge Referral and Transfer (Assume Management) information follow:

Ref ID	Requirement
NSUBR-220	The Date Referral Received (Accepted) must represent a date that is on or earlier than the current date.
NSUBR-252	When a Booking Priority for Abnormality is provided, the Timeframe for Participant to be seen in can be derived thus, <ul style="list-style-type: none"> <li>• Low grade then 6 months</li> <li>• High grade (includes ASC-H and HSIL) then 1 month</li> <li>• AGUS then 1 month</li> <li>• ?Ca then 7 days</li> <li>• Abnormal cervix - ?Ca then 7 days</li> <li>• Abnormal cervix - normal smear history including current smear then 6 months</li> <li>• AIS then 1 month</li> </ul> Other then 6 months
NSUBR-264	Booking Priority for Abnormality should not be provided if the Referral Type is Discharge or Transfer responsibility
NSUBR-265	Timeframe for Participant to be seen in should not be provided when Referral Type is Transfer responsibility
NSUBR-300	Booking Priority for Abnormality is mandatory if the Referral Type is Referred for treatment
NSUBR-561	Health Practitioner who sent Referral request is mandatory
NSUBR-562	Health Facility where Referral request was sent from is mandatory
NSUBR-563	Referred To Health Practitioner is mandatory in a Discharge Summary
NSUBR-564	Health Facility where Referral request was sent to and/or accepted is mandatory
NSUBR-816	Free text description of Booking Priority of 'Other' is mandatory.
NSUBR-817	Free text description of Method of Referral of 'Other' is mandatory.
NSUBR-818	Referral Status must be Accepted or Cancelled.
NSUBR-819	Followup Timeframe is derived from Booking Priority, if supplied, according to NSUBR-252. If Booking Priority is not supplied, then Followup Timeframe will be taken from the message, if supplied

**Table 29: Referral and Discharge Event Business Rules**

Rules applicable to processing of RSD messages containing Visit information follow:

Ref ID	Requirement
NSUBR-301	The Visit Date cannot be before the Participant's Date of Birth
NSUBR-303	The Visit Date, for an attended Visit, cannot be after the Participant's Date of Death
NSUBR-378	The Admission Type is mandatory for an attended Colposcopy Visit
NSUBR-379	When you undertake a colposcopy exam (Colposcopy Performed is Yes), and the Site is Cervical you must provide values for TZ Visible and Colposcopic Appearance. When you undertake a colposcopy exam (Colposcopy Performed is Yes), and the Site is Vaginal, you must provide a value for Colposcopic Appearance, but

Ref ID	Requirement
	NOT for TZ Visible
NSUBR-381	Predicted Abnormality must not be provided unless Colposcopic Appearance is Abnormal, when it is mandatory
NSUBR-385	When a Participant has a high grade or worse history the Follow Up Within must not be more than 12 months
NSUBR-388	The Visit Date has to be on or earlier than the current date
NSUBR-417	For transaction types SRP and NOT, follow-up-types of 'SMT' and 'ONCOL' will not be accepted
NSUBR-461	When the Result Status is Final, <ul style="list-style-type: none"> <li>• Save it, if there is no Final version of this event for the Participant</li> <li>• Reject it, if there already is a Final version of this event for the Participant</li> </ul>
NSUBR-462	When the Result Status is Change, <ul style="list-style-type: none"> <li>• Save it, regardless</li> </ul>
NSUBR-464	When the Result Status is not Final, Change or Delete, <ul style="list-style-type: none"> <li>• Don't save, just acknowledge receipt</li> </ul>
NSUBR-465	When one or more versions of the event already exist for the Participant, the Status Change Date/Time (MSH-6) is used to determine where the version of the event sent in the HL7 message fits in terms of chronological order, i.e. is it a new version or an older one?
NSUBR-503	Visit Date is mandatory
NSUBR-504	Colposcopy is assumed to be performed when <ul style="list-style-type: none"> <li>* any value is received for "TZ Visible"</li> <li>OR</li> <li>* any value is received for "Colposcopic Appearance"</li> <li>OR</li> <li>* the visit includes any visit actions excluding Total and Subtotal Hysterectomy.</li> </ul>
NSUBR-697	When a Participant attends a Colposcopy Visit then one or more Actions must be provided
NSUBR-698	It is mandatory to provide the Health Practitioner
NSUBR-699	The health facility where a Visit took place or was booked to take place must be provided
NSUBR-710	To cancel a visit, DNA or appointment a REF message is sent with the RF1-1 field set to 'C' for cancel
NSUBR-812	When Colposcopy performed is Yes, site must be one of Cervical or Vaginal.
NSUBR-815	Labs sending Visit message must include both referred by and referred to health facility.

**Table 30: Visit Event Business Rules**

Rules applicable to processing of RSD messages containing DNA and Appointment information follow:

Ref ID	Requirement
NSUBR-249	Re-scheduled Appointment Date can in the past, present or future. However if it's a date in the past it shouldn't be before the date of the DNA visit
NSUBR-385	When a Participant has a high grade or worse history the Follow Up Within must not be more than 12 months

Ref ID	Requirement
NSUBR-388	The Visit Date has to be on or earlier than the current date
NSUBR-461	When the Result Status is Final, <ul style="list-style-type: none"> <li>Save it, if there is no Final version of this event for the Participant</li> <li>Reject it, if there already is a Final version of this event for the Participant</li> </ul>
NSUBR-462	When the Result Status is Change, <ul style="list-style-type: none"> <li>Save it, regardless</li> </ul>
NSUBR-464	When the Result Status is not Final, Change or Delete, <ul style="list-style-type: none"> <li>Don't save, just acknowledge receipt</li> </ul>
NSUBR-465	When one or more versions of the event already exist for the Participant, the Status Change Date/Time (MSH-6) is used to determine where the version of the event sent in the HL7 message fits in terms of chronological order, i.e. is it a new version or an older one?
NSUBR-698	Referred To Health Practitioner is mandatory
NSUBR-699	The health facility where a Visit took place or was booked to take place must be provided
NSUBR-709	Intended Purpose is mandatory for an unattended Colposcopy Visit (DNA)
NSUBR-710	To cancel a visit, DNA or appointment a REF message is sent with the RF1-1 field set to 'C' for cancel
NSUBR-815	Labs sending Visit message must include both referred by and referred to health facility.

**Table 31: DNA and Appointment Event Business Rules**

## 2.4 Examples

### 2.4.1 Referral for Treatment Message

```

MSH|^~\&|Sample Lab System|Sample
Lab|NCSR|NSU|20080724223312||REF^112|965822|P|2.4^NZL^1.0<cr>
RF1|A^Accepted^HL70283|R|MED^Medical^HL70281|||GEN199236|200510222022|||GEN199236<cr>
>
PRD|RP^99NZPRRL|Smith^A^^Dr~Jones^S^^Dr|^MidCentral
Med^Tauranga|||S134^CS~10154^CS|||<cr>
PRD|RT^99NZPRRL|Oram^A^^Dr~Dave^S^^Dr|^North Shore Health
Centre^Auckland|||A297^CS|||<cr>
PID|1||AAB9023^NHI^NZLMOH^^^|Hamilton^Gertrude^Mrs||19751214|F||44|1-192 Cameron
Road^Wilton^WELLINGTON^6011|^PRN^PH^^04^4567835~^PRN^FX^^03^1111234|EN|||||||||||
|<cr>
DG1|1||AGUS^99NZCOLPPRIORITY|obs4|200708121633|W|obs7|obs8|obs9|obs10|obs11|obs12|o
bs13|obs14|||200607121633<cr>
NTE|1|L|Laboratory test performed as requested <cr>
NTE|1|L|and completed but no antibodies detected<cr>
NTE|2|L|Mild thrombocytopenia|OC<cr>
ORC|IN|GEN199236|||10154^^^CS|||<cr>
OBR|2|GEN199236|GEN199236|21978-2^Source of Follow-up
Information^LN||200606271633||10154^^^CS|||200606291633||10154^^^CS|||F|||<cr>

```

OBX|1|CE|21978-2^Source of Follow-up Information^LN||PH^99NZREFMED|||||F<cr>

#### 2.4.2 Assume Management Message

MSH|^~\&|Sample Lab System|Sample  
Lab|NCSR|NSU|20080805144942||REF^112|599641|P|2.4^NZL^1.0<cr>  
RF1|A^Accepted^HL70283|R|MED^Medical^HL70281|AM^Assume  
Management^HL70282||GEN86393|200511171226|||GEN86393<cr>  
PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral  
Med^Tauranga|||S134^CS~10154^CS|||<cr>  
PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
Centre^Auckland|||A297^CS~08929^CS|||<cr>  
PID|1||AAB9023^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19751214|F||44|1-192 Cameron  
Road^Wilton^WELLINGTON^6011|^PRN^PH^04^4567835~^PRN^FX^03^111234||EN|||||||||||  
<cr>

#### 2.4.3 Referral Deletion Message

MSH|^~\&|AcmeGPsystem|MyGP|PMS5|MyColp|20071027091513|PKI|REF^114^REF\_112|ROY4458|  
P|2.4^NZL^1.0<cr>  
RF1||R^Routine^99NZPRIORITY|MED|RP^Return Patient after  
Evaluation^HL70282||GEN199236|20071021|||E^Event Summary^HL70336<cr>  
PRD|RP^Referring Provider^99NZPRRL|Smith^A^Dr|^MidCentral  
Med^Tauranga|||S134^CS~41153^CS|||<cr>  
PRD|RT^Referred to Provider^99NZPRRL|Bloggs^F^Dr|^Acme Specialist  
Centre^Tauranga|||A297^CS~05646^CS|||<cr>  
PID|1||AAA1234^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19710212|F||11^New Zealand  
European/Pakeha^99NZETH|20 Cameron Road^Tauranga<cr>

#### 2.4.4 Discharge Referral Message

MSH|^~\&|Sample Lab System|Sample  
Lab|NCSR|NSU|20080805122349||REF^112|41807|P|2.4^NZL^1.0<cr>  
RF1|A^Accepted^HL70283|R|DRF^Discharge Referral^HL70281|||GEN386205|200511181343<cr>  
PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral  
Med^Tauranga|||S134^CS~08440^CS|||<cr>  
PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
Centre^Auckland|||A297^CS~05646^CS|||<cr>  
PID|1||AAB9023^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19751214|F||44|||EN|||||||||||<cr>  
DG1|1||AGUS^99NZCOLPPRIORITY||200708121633|W|||||||||||200607121633<cr>

#### 2.4.5 Discharge Summary Message

MSH|^~\&|Sample Lab System|Sample  
Lab|NCSR|NSU|20080804182708||REF^112|741038|P|2.4^NZL^1.0<cr>  
RF1|A^Accepted^HL70283|R|DIS^Discharge^HL70281|||GEN549256|200610151539<cr>  
PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral  
Med^Tauranga|||S134^CS~41153^CS|||<cr>

PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
 Centre^Auckland|||A297^CS~05646^CS||<cr>  
 PID|1||AAB9023^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19751214|F|44|||EN|||<cr>  
 ORC|IN|GEN549256|||12346^Woods^D^Dr|||<cr>  
 OBR|2|GEN549256|GEN549256|21976-6^Cancer Outcome  
 Status^LN||200606271633||10154^CS||200606291633||10154^CS|||F||<cr>  
 OBX|3|CE|21976-6^Cancer Outcome Status^LN||1M^1 month^99NZCOLPFLWTIME|||F<cr>  
 OBX|4|CE|21976-6^Cancer Outcome Status^LN||COLP^Colposcopist^99NZCOLPFLWUP|||F<cr>  
 OBX|5|CE|21976-6^Cancer Outcome Status^LN||COMPL^Completely^99NZCOLPTZ|||F<cr>  
 OBX|6|CE|21976-6^Cancer Outcome Status^LN||L^Low grade^99NZCOLPGRADE|||F<cr>  
 OBX|7|CE|21976-6^Cancer Outcome Status^LN||ABML^Abnormal^99NZCOLPAPR|||F<cr>  
 OBX|10|CE|21976-6^Cancer Outcome Status^LN||RPT^Repeat smear^99NZCOLPACTION|||F<cr>  
 NTE|8|L|last smear gave unsatisfactory results<cr>  
 OBX|12|CE|21976-6^Cancer Outcome Status^LN||TRT^Arranged  
 treatment^99NZCOLPACTION|||F<cr>  
 OBX|11|CE|19763-2^Smear Site^LN||R^Routine Cervical^BTH-2001|||F<cr>  
 PV1|||200710110000<cr>

#### 2.4.6 Visit Message

MSH|^~\&|PMS5|MyColp|goldPlated|MyGP|20071027091513|PKI|REF^112^REF\_112|ROY4480|P|2.4  
 ^NZL^1.0<cr>  
 RF1|A^Accepted^HL70283||NOT||ROY4473||<cr>  
 PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral Med^Tauranga|||S134^CS||<cr>  
 PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
 Centre^Auckland|||A297^CS~12941^CS||<cr>  
 PID|1||AAB9023^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19751214|F|44|1-192 Cameron  
 Road^Wilton^WELLINGTON^6011|^PRN^PH^04^4567835~^PRN^FX^03^1111234||EN|||<cr>  
 PR1|1|35653-00^Subtotal abdominal hysterectomy^ICD-3||20071020<cr>  
 ORC|IN|ORD000016|||12941^DOCTOR^Ordering^M^Dr^CS<cr>  
 OBR|1|ORD000016|07877|21976-6^Cancer Outcome  
 Status^LN||200607011633|||200607051633|||F<cr>  
 OBX|3|CE|21976-6^Cancer Outcome Status^LN||1M^1 month^99NZCOLPFLWTIME|||F<cr>  
 OBX|4|CE|21976-6^Cancer Outcome Status^LN||COLP^Colposcopist^99NZCOLPFLWUP|||F<cr>  
 OBX|5|CE|21976-6^Cancer Outcome Status^LN||COMPL^Completely^99NZCOLPTZ|||F<cr>  
 OBX|6|CE|21976-6^Cancer Outcome Status^LN||L^Low grade^99NZCOLPGRADE|||F<cr>  
 OBX|7|CE|21976-6^Cancer Outcome Status^LN||ABML^Abnormal^99NZCOLPAPR|||F<cr>  
 OBX|10|CE|21976-6^Cancer Outcome Status^LN||RPT^Repeat smear^99NZCOLPACTION|||F<cr>  
 NTE|8|L|last smear gave unsatisfactory results<cr>  
 OBX|12|CE|21976-6^Cancer Outcome Status^LN||TRT^Arranged  
 treatment^99NZCOLPACTION|||F<cr>  
 OBX|11|CE|19763-2^Smear Site^LN||R^Routine Cervical^BTH-2001|||F<cr>  
 PV1|||20071026091500<cr>

#### 2.4.7 Update Visit Message

MSH|^~\&|PMS5|MyColp|goldPlated|MyGP|20071027091513|PKI|REF^112^REF\_112|ROY4480.1|P|2.  
 4^NZL^1.0<cr>  
 RF1|A^Accepted^HL70283||NOT||ROY4473||<cr>  
 PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral Med^Tauranga|||S134^CS||<cr>  
 PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
 Centre^Auckland|||A297^CS~12941^CS||<cr>

PID|1||AAB9023^^NHI^NZLMOH^^^||Hamilton^Gertrude^^Mrs||19751214|F||44|1-192 Cameron Road^Wilton^WELLINGTON^^6011||^PRN^PH^^04^4567835~^PRN^FX^^03^111234||EN|||||||||  
|<cr>  
ORC|IN|ORD000016||||||12941^DOCTOR^Ordering^M^^Dr^^CS<cr>  
OBR|1|ORD000016|07877|21976-6^Cancer Outcome Status^LN||200607011633||||200607051633|||||C<cr>  
OBX|3|CE|21976-6^Cancer Outcome Status^LN||1M^1 month^99NZCOLPFLWTIME|||||C<cr>  
OBX|4|CE|21976-6^Cancer Outcome Status^LN||COLP^Colposcopist^99NZCOLPFLWUP|||||C<cr>  
OBX|5|CE|21976-6^Cancer Outcome Status^LN||COMPL^Completely^99NZCOLPTZ|||||C<cr>  
OBX|6|CE|21976-6^Cancer Outcome Status^LN||L^Low grade^99NZCOLPGRADE|||||C<cr>  
OBX|7|CE|21976-6^Cancer Outcome Status^LN||ABML^Abnormal^99NZCOLPAPR|||||C<cr>  
OBX|10|CE|21976-6^Cancer Outcome Status^LN||RPT^Repeat smear^99NZCOLPACTION|||||C<cr>  
NTE|8|L|last smear gave unsatisfactory results<cr>  
OBX|12|CE|21976-6^Cancer Outcome Status^LN||TRT^Arranged treatment^99NZCOLPACTION|||||C<cr>  
OBX|11|CE|19763-2^Smear Site^LN||R^Routine Cervical^BTH-2001|||||C<cr>  
PV1||||||||||||||||||||||20071026091500<cr>

#### 2.4.8 Cancel Visit Message

MSH|^~\&|PMS5|MyColp|goldPlated|MyGP|20071027091513|PKI|REF^112^REF\_112|ROY4480.2|P|2.4^NZL^1.0<cr>  
RF1|C^Cancelled^HL70283||NOT||ROY4473||||<cr>  
PRD|RP^^99NZPRRL|Smith^A^^Dr~Jones^S^^Dr|^MidCentral Med^Tauranga|||S134^CS|||<cr>  
PRD|RT^^99NZPRRL|Oram^A^^Dr~Dave^S^^Dr|^North Shore Health Centre^Auckland|||A297^CS~12941^CS|||<cr>  
PID|1||AAB9023^^NHI^NZLMOH^^^||Hamilton^Gertrude^^Mrs||19751214|||||||||||||<cr>  
PV1||||||||||||||||||||||20071026091500<cr>

#### 2.4.9 DNA Message

MSH|^~\&|Sample Lab System|Sample Lab|NCSR|NSU|20080724234454||REF^112|163492|P|2.4^NZL^1.0<cr>  
RF1|A^Accepted^HL70283||DNA^Did not Attend^HL70281|||GEN896692|200510241225<cr>  
PRD|RP^^99NZPRRL|Smith^A^^Dr~Jones^S^^Dr|^MidCentral Med^Tauranga|||S134^CS~08440^CS|||<cr>  
PRD|RT^^99NZPRRL|Oram^A^^Dr~Dave^S^^Dr|^North Shore Health Centre^Auckland|||A297^CS~05646^CS|||<cr>  
PID|1||AAB9023^^NHI^NZLMOH^^^||Hamilton^Gertrude^^Mrs||19751214|F||44|||||EN|||||||||<cr>  
ORC|IN|GEN896692||||||12346^Woods^D^^Dr|||<cr>  
OBR|2|GEN896692|GEN896692|21976-6^Cancer Outcome Status^LN||200606271633||12941^^^CS|||200606291633||12941^^^CS|||||F|||<cr>  
OBX|5|CE|21976-6^Cancer Outcome Status^LN||TRE^Treatment^99NZCOLPPURP|||||F<cr>  
PV1||||||||||||||||||||||200511201122<cr>

#### 2.4.10 Updating DNA Message

MSH|^~\&|Sample Lab System|Sample Lab|NCSR|NSU|20080724234454||REF^112|163492|P|2.4^NZL^1.0<cr>  
RF1|A^Accepted^HL70283||DNA^Did not Attend^HL70281|||GEN896692|200510241225<cr>

PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral  
 Med^Tauranga|||S134^CS~08440^CS|||<cr>  
 PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
 Centre^Auckland|||A297^CS~05646^CS|||<cr>  
 PID|1||AAB9023^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19751214|F|44|||||EN|||||<cr>  
 ORC|IN|GEN896692|||||12346^Woods^D^Dr|||<cr>  
 OBR|2|GEN896692|GEN896692|21976-6^Cancer Outcome  
 Status^LN|||200606271633|||12941^CS|||200606291633||12941^CS|||||C|||<cr>  
 OBX|5|CE|21976-6^Cancer Outcome Status^LN||TRE^Treatment^99NZCOLPPURP|||||C<cr>  
 PV1|||||200511201122<cr>

**2.4.11 Cancel DNA Message**

MSH|^~\&|Sample Lab System|Sample  
 Lab|NCSR|NSU|20080724234454||REF^112|163492.1|P|2.4^NZL^1.0<cr>  
 RF1|C^Cancelled^HL70283||DNA^Did not Attend^HL70281|||GEN896692|200510241225<cr>  
 PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral  
 Med^Tauranga|||S134^CS~08440^CS|||<cr>  
 PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
 Centre^Auckland|||A297^CS~05646^CS|||<cr>  
 PID|1||AAB9023^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19751214|F|44|||||EN|||||<cr>  
 PV1|||||200511201122<cr>

**2.4.12 Future Visit (Appointment) Message**

MSH|^~\&|Sample Lab System|Sample  
 Lab|NCSR|NSU|20080724223919||REF^112|1216895959|P|2.4^NZL^1.0<cr>  
 RF1|A^Accepted^HL70283||APT^Appointment Details^HL70281|||GEN896692|200510202225<cr>  
 PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral  
 Med^Tauranga|||S134^CS~08440^CS|||<cr>  
 PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
 Centre^Auckland|||A297^CS~05646^CS|||<cr>  
 PID|1||AAB9023^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19751214|F|44|||||EN|||||<cr>  
 PV1|||<cr>  
 PV2|||||200611282213<cr>

**2.4.13 Cancel Future Visit Message**

MSH|^~\&|Sample Lab System|Sample  
 Lab|NCSR|NSU|20080724223919||REF^112|1216895960|P|2.4^NZL^1.0<cr>  
 RF1|C^Cancelled^HL70283||APT^Appointment Details^HL70281|||GEN896692|200510202225<cr>  
 PRD|RP^99NZPRRL|Smith^A^Dr~Jones^S^Dr|^MidCentral  
 Med^Tauranga|||S134^CS~08440^CS|||<cr>  
 PRD|RT^99NZPRRL|Oram^A^Dr~Dave^S^Dr|^North Shore Health  
 Centre^Auckland|||A297^CS~05646^CS|||<cr>  
 PID|1||AAB9023^NHI^NZLMOH^||Hamilton^Gertrude^Mrs||19751214|F|44|||||EN|||||<cr>  
 PV1|||<cr>  
 PV2|||||200611282213<cr>

## 2.4.14 Reschedule Visit Message

### Original visit cancelled as above followed by new appointment message

```
MSH|^~\&|Sample Lab System|Sample  
Lab|NCSR|NSU|20080724223919||REF^112|1216895959|P|2.4^NZL^1.0<cr>  
RF1|A^Accepted^HL70283||APT^Appointment Details^HL70281|||GEN896692|200510202225<cr>  
PRD|RP^99NZPRRL|Smith^A^^Dr~Jones^S^^Dr|^MidCentral  
Med^Tauranga|||S134^CS~08440^CS|||<cr>  
PRD|RT^99NZPRRL|Oram^A^^Dr~Dave^S^^Dr|^North Shore Health  
Centre^Auckland|||A297^CS~05646^CS|||<cr>  
PID|1||AAB9023^^NHI^NZLMOH^^^||Hamilton^Gertrude^^Mrs||19751214|F||44|||||EN|||||||<cr>  
PV1|||<cr>  
PV2|||||||200701152213<cr>
```

## 3 COMMUNICATIONS WITH LABORATORIES USING HL7 MESSAGING

### 3.1 General Considerations

This section must be read in conjunction with the following documents published by HISO.

- Pathology and Radiology Messaging Standard
- Pathology and Radiology Implementation Guide

The National Screening Unit accepts data as standard unsolicited results (ORU) but restricts some fields to specific ranges of values. Some optional fields are mandatory when sending data to the NCSP-R.

The National Screening Unit does not support delimiters other than the default ones specified in the standard. It is essential that messages be constructed in segmented form rather than large blocks of formatted text.

The service identifiers (OBR-24) are restricted to CP, PAT, LAB, SP and OTH. It is expected that cytology results will use CP, histology will use PAT or SP, synopsis results will use LAB and supplementary information, such as pregnancy status, will use OTH.

See Table 3 above for a summary of what information is carried in each message type.

As most messages to the NCSP-R are copies of messages the original recipient is lost from the message header. Further more the message header does not use HPI codes. For this reason all messages must have values for the facility codes in OBR-46 (placer facility code) and OBR-47 (filler facility code) where the name of the coding system is CS for NSU identifiers and HF for HPI.

For provider identifiers use an assigning authority of CS for NSU codes, HI for HPI codes, or HCM for Health Centre Member codes.

It is mandatory that OBR-16 contain a code that is recognised by the Register, viz a HPI code, NSU provider code, or HCM provider code.

Of all CE and XCN field types that are used by the Register, only the identifier and coding system/assigning authority sub-components are used. The text sub-component within CE field types is ignored and so are all name sub-components within the XCN field types. If the identifier for a health worker or health facility is not known, a table is provided at the end of this document with a list of identifiers in use by the Register.

Each message must only have one participant (PID) per message (MSH). This does not preclude a stream of messages with different participants being sent at the same time.

It is implied in general by the HL7 standards that non repeating fields can be repeated by local agreement. The NCSP-R will not only ignore additional repeats but will reject the message as being in error.

The Register supports ASCII and UNICODE and any value in MSH-18 will be ignored.

Where multiple results are to be reported in OBX segments, each individual result must be reported in separate OBX segments, rather than as repeats of OBX-5, even if they are for the same result type. For example, where more than one interpretation code is supplied those interpretation codes must be included in separate OBX segments. Multiple alternate identifiers for the same result are allowed as repeats in OBX-5, so long as exactly one uses a coding system supported by the NCSP-R.

Where multiple OBX occur with the same code in OBX-3 then sub-ids will need to be used in OBX-4 start at 1 and incrementing by 1 for each subsequent OBX in a set.

For example

```
OBX|1|CE|19763-2^Specimen Site^LN||.....
OBX|2|CE|19772-3^Preparation Technique^LN||.....
OBX|3|CE|19766-4^Statement of Adequacy^LN|1|.....
OBX|4|CE|19766-4^Statement of Adequacy^LN|2|.....
OBX|5|CE|19762-4^General Category^LN||.....
OBX|6|CE|19765-7^Interpretation^LN|1|.....
OBX|7|CE|19765-7^Interpretation^LN|2|.....
OBX|8|CE|19765-7^Interpretation^LN|3|.....
```

### 3.1.1 Error Reporting

Errors will be reported in an ERR segment with additional text indicating the nature of the error.

For example

```
MSH|^~\&|NCSR|NSU|Sample Lab
System|AK|200707250949||ACK^R01|337089580|P|2.4^NZL^1.0
MSA|AR|AMK0810|The incoming message has been rejected due to an error.
ERR|PID^2^11^207&AIE. Patient-Address-Country-Code 'New Zealand' not
valid&HL70357
```

The error text is pre-pended with a three letter code relating to the HL70357 Error Condition Code as follows, codes not listed are not used by the NCSP-R:

Error Condition Code	Description	Abbreviation
100	Segment sequence error	SSE
101	Required field missing	RFM
102	Data type error	DTE
103	Table value not found	TVN
201	Unsupported event code	UEC
204	Unknown key identifier	UKI
205	Duplicate key identifier	DKI
207	Application internal error	AIE

**Table 32: HL70357 Error Condition Code Abbreviations**

### 3.1.2 Use of EI data types for order numbers

In the case of order numbers the following usage is supported

Sub Component	Type	Notes
<entity identifier>^	ST	Actual order number (mandatory).
<namespace ID>^	IS	Name of the organisation issuing the number. (Optional)
<universal ID>^	ST	Code of the organisation issuing the number. Should be the HPI facility code where possible. (mandatory if not the normal issuer e.g. If placer order number is generated by the lab)
<universal ID type>	ID	Issuer of the code in previous component. Would normally be HF for HPI codes, CS for HFC codes issued by the NSU or L for

Sub Component	Type	Notes
		local. (mandatory If previous component present)

**Table 33: Order number identifier**

## 3.2 Cytology Results

Laboratories interpreting cytology specimens will provide cytology reports to the NCSP-R Register in a standard format. Each observation item (specimen site, preparation technique, interpretation, recommendation etc) will be reported in a single OBX segment.

The observation types will be described using LOINC codes, with observation values coded in the Bethesda 2001 code-set or code sets specific to the NCSP-R.

### 3.2.1 Cytology Reporting Details

Data Element	Field	Cardinality	Seg/Field
Universal Service ID	OBR-4	1	RNZ0504^Gynaecological Cytology^NZPOCS
Observation date	OBR-7	1	Collection Date
Smear Taker ID	OBR-10	0 or 1	Collector ID. If not provided it will be assumed that the provider in OBR-16 also took the smear.
Specimen received date	OBR-14	1	Date Received At Lab
Ordering Provider ID	OBR-16	1	Ordering Provider
Diagnostic Service Selector ID	OBR-24	1	CP

**Table 34: Cytology Reporting Details**

The general structure of cervical cytology reports follows the OBX segments in the table below. The LOINC codes to be used in OBX-3, Observation Identifier, are as listed in the Cytology Observation Codes table:

#### 3.2.1.1 Cytology Observation Codes (LOINC):

Element	Cardinality / Optionality	Observation Code (OBX-3) LOINC
Specimen Site	1 is required	19763-2 Specimen Site
Preparation Technique/ Specimen Type	1 is required	19772-3 Preparation Techniques Values from Table 37 below  Product type is a value from Table 38 and recorded in OBX-17
Adequacy	1 is required, up to 2 may be given	19764-0 Statement of adequacy

General Category	1 may be given	19762-4 General Category
Interpretation	Up to 5 may be given	19765-7 Interpretation
Recommendation	1 may be given	19773-1 Recommendation

**Table 35: Cytology Observation Codes**

The NCSP-R will accept Bethesda 2001 NZ Modified values for each of these observation types, as listed in the following table.

Type	OBX-3 LOINC coded value-type	OBX-5.1 Bethesda Code	OBX-5.2 Bethesda Description
Specimen Site	19763-2 Specimen site	T	Vault
		R	Cervical
		V	Vaginal
Adequacy	19764-0 Statement of adequacy	S1	The specimen is satisfactory for evaluation (optional free text)
		S2	The specimen is satisfactory for evaluation (optional free text). No endocervical/transformation zone component present
		UA	The specimen is unsatisfactory for evaluation because of insufficient squamous cells
		UB	The specimen is unsatisfactory for evaluation because of poor fixation/preservation
		UC	The specimen is unsatisfactory for evaluation because foreign material obscures the cells
		UD	The specimen is unsatisfactory for evaluation because inflammation obscures the cells
		UE	The specimen is unsatisfactory for evaluation because blood obscures the cells
		UF	The specimen is unsatisfactory for evaluation because of cytolysis/autolysis
General Category	19762-4 General category	UG	The specimen is unsatisfactory for evaluation because ... (free text)
		G1	Negative for intraepithelial lesion or malignancy
		G2	Epithelial cell abnormality: See

Type	OBX-3 LOINC coded value-type	OBX-5.1 Bethesda Code	OBX-5.2 Bethesda Description
			interpretation/result
		G3	Other: See interpretation/result
Recommendation	19773-1 Recommendation	R1	The next smear should be taken at the usual screening interval
		R2	Please repeat the smear within 3 months
		R3	Please repeat the smear within 3 months of the end of pregnancy
		R4	Please repeat the smear in 3 months
		R5	Please repeat the smear in 6 months
		R6	Please repeat the smear in 12 months
		R7	Because a previous smear showed atypical squamous cells or low grade changes, please repeat the smear in 12 months
		R8	Annual smears are indicated because of previous high grade abnormality
		R9	Referral for specialist assessment is indicated
		R10	Urgent referral for specialist assessment is indicated
		R12	Please repeat the smear shortly after a course of oestrogen treatment
		R13	Under specialist care
		R14	In view of the abnormal clinical history provided, urgent referral for assessment is recommended regardless of cytological findings
Interpretation	19765-7 Interpretation	O1	There are organisms consistent with Trichomonas vaginalis
		O2	There are fungal organisms morphologically consistent with Candida species
		O3	There is a shift in microbiological flora suggestive of bacterial vaginosis
		O4	There are bacteria morphologically consistent with Actinomyces species
		O5	There are cellular changes consistent with Herpes simplex virus
		OT1	There are reactive cellular changes present (optional free text)
		OT2	There are endometrial cells present in

Type	OBX-3 LOINC coded value-type	OBX-5.1 Bethesda Code	OBX-5.2 Bethesda Description
			a woman over the age of 40 years
		OT3	There are atrophic cellular changes present
		ASL	There are atypical squamous cells of undetermined significance (ASC-US) present
		ASH	There are atypical squamous cells present. A high grade squamous intraepithelial lesion cannot be excluded (ASC-H)
		LS	There are abnormal squamous cells consistent with a low grade squamous intraepithelial lesion (LSIL; CIN1/HPV)
		HS1	There are abnormal squamous cells consistent with a high grade squamous intraepithelial lesion (HSIL). The features are consistent with CINII or CINIII
		HS2	There are abnormal squamous cells consistent with a high grade squamous intraepithelial lesion (HSIL) with features suspicious for invasion
		SC	There are abnormal squamous cells showing changes consistent with squamous cell carcinoma
		AG1	There are atypical endocervical cells present
		AG2	There are atypical endometrial cells present
		AG3	There are atypical glandular cells present
		AG4	There are atypical endocervical cells favouring a neoplastic process
		AG5	There are atypical glandular cells favouring a neoplastic process
		AIS	There are abnormal endocervical cells consistent with adenocarcinoma in-situ (AIS)
		AC1	There are abnormal glandular cells consistent with endocervical adenocarcinoma
		AC2	There are abnormal glandular cells consistent with endometrial adenocarcinoma
		AC3	There are abnormal glandular cells consistent with extrauterine adenocarcinoma

Type	OBX-3 LOINC coded value-type	OBX-5.1 Bethesda Code	OBX-5.2 Bethesda Description
		AC4	There are abnormal glandular cells consistent with adenocarcinoma
		AC5	There are abnormal cells consistent with a malignant neoplasm

**Table 36: Bethesda 2001 NZ Modified values**

Notes:

1. Specimen site code T is only valid for cytology results and not for reporting Colposcopist visits

### 3.2.2 Preparation Technique/Specimen Type (collection method)

The preparation technique (collection method) will be reported in a single OBX as outlined above in 3.2.1.1. The preparation technique result codes are listed in the code table below which has been extracted from the Bethesda code table. This table was originally designated 99NZCYTOCOL and this identification will be accepted in HL7 messages.

Collection Method	HL7 Code	Description
Both LBC and pap smear submitted	COM	Combined (conventional and liquid based)
Both Spatula and Cytobrush	CPS	Conventional pap smear
Cytobrush	CPS	Conventional pap smear
Other	CPS	Conventional pap smear
Spatula	CPS	Conventional pap smear
Spatula and Cervix Broom	CPS	Conventional pap smear
Cervix Broom	CPS	Conventional pap smear
Unknown	CPS	Conventional pap smear
Both Spatula and Cytobrush	LBC	Liquid based cytology
Cytobrush	LBC	Liquid based cytology
Spatula	LBC	Liquid based cytology
Spatula and Cervix Broom	LBC	Liquid based cytology
Cervix Broom -	LBC	Liquid based cytology
Other	LBC	Liquid based cytology
Unknown	LBC	Liquid based cytology
Swab for HPV testing	SWB	Not valid for Cytology testing

**Table 37: NZ Collection Methods from Bethesda Codes**

### 3.2.3 LBC Products

The commercial product used for a LBC collection is to be sent in OBX-17 using a code from table 99NZCLBCP.

Code	Commercial Preparation
SRPTH	SurePath
THPRP	ThinPrep
OTHER	Other

**Table 38: 99NZCLBCP LBC Collection**

### 3.2.4 Example

```
MSH|^~\&|AcmeGPsystem|MyGP|PMS5|MyColp|20071027091513|PKI|ORU^R01
|ROY4454|P|2.4^NZL^1.0<cr>
PID|1||AAA1234^^NHI^NZLMOH||Hamilton^Gertrude^^Mrs||19710212||F||11^New Zealand
European/Pakeha^99NZETH|20 Cameron Road^^Tauranga <cr>
OBR|1|ORD000016|07877| RNZ0504^Gynaecological Cytology^NZPOCS |||200607011633
|||||200607051633||013427^DOCTOR^Ordering^M^^Dr^^ HI
|||||CP|F|||||||||||||FZZ999|FXX888
OBX|1|CE|19763-2^Specimen Site ^LN||R^Cervical^BTH-2001|||||F
OBX|2|CE|19772-3^Preparation Techniques^LN||CPS ^Conventional pap smear^BTH-2001
...|||||F||||013431^DOCTOR^Observing^M^^Dr^^HI||SRPTH^SurePath^99NZCLBCP
OBX|3|CE|19764-0^Statement of adequacy^LN|
|S1^The specimen is satisfactory for evaluation^BTH-2001|||||F
OBX|4|CE|19762-4^General Categories^LN|
|G1^Negative for intraepithelial lesion or malignancy
^BTH-2001|||||F
OBX|5|CE|19765-7^Microscopic Observation^LN|
|O4^There are bacteria morphologically consistent with
Actinomyces species^BTH-2001|||||F
OBX|6|CE|19773-1^Recommended followup^LN||R1^The next smear
should be taken at the usual screening interval^BTH-2001|||||F
```

## 3.3 Histology Results

Histology results are reported without restriction (except as indicated in this section) using SNOMED codes.

It is recommended that observations are coded in SNOMED 1993 or 1986 (identified in HL7 as SNM-1993 and SNM-1986) according to the NCSP Interim Operational Policy and Quality Standards documentation but this could change once New Zealand adopts SNOMED-CT.

### 3.3.1 Histology Reporting Details

Data Element	Field	Cardinality	Seg/Field
Universal Service ID	OBR-4	1	29757-2^Histology Studies^LN
Observation date	OBR-7	1	Collection Date
Smear Taker ID	OBR-10	0 or 1	Collector ID. If not provided it will be assumed that the provider in OBR-16 also took the smear.
Specimen received date	OBR-14	1	Date Received At Lab

Data Element	Field	Cardinality	Seg/Field
Ordering Provider ID	OBR-16	1	Ordering Provider
Diagnostic Service Selector ID	OBR-24	1	PAT or SP

**Table 39: Histology Reporting Details**

Histology Observation Data Elements

Data Element	Cardinality	OBX-3	OBX-5
Topography	1	22633-2^site of origin^LN	(see Topography Codes below)
Adequacy	0..1	22634-0^gross observation ^LN	SNOMED code (see below)
Diagnosis	0..5	22637-3^final diagnosis^LN	SNOMED code (see below)
Specimen Type/ Procedure Code	0..1	19763-2^specimen source^LN	User-defined table (see Specimen Type Codes in Table 43), or SNOMED code from Table 42.

**Table 40: Histology Observation Data Elements**

**Histology Codes used by the National Cervical Screening Programme - Register**

Adequacy of specimen		1986 Code	1993 Code	
Insufficient or unsatisfactory material for diagnosis		M09000	M09010	
There is no code for satisfactory materials.				
Site (topography) of specimen		1986 Code	1993 Code	
Vagina		T81	T82000	
Cervix (includes endocervix and/or ectocervix/exocervix)		T83	T83200	
Summary diagnosis	Code stored on register	1986 Code	1993 Code	Abn Type <sup>3</sup>
There will be a maximum of five M codes transmitted to the register.				
Negative result - normal tissue		M00100	M60000	N
Inflammation		M40000	M40000	N
Microglandular hyperplasia		M72480	M72480	N
Squamous Metaplasia		M73000	M73000	N
Atypia		M69700	M67000	L
HPV, koilocytosis, condyloma (NOS) Condyloma acuminatum	M76700	M76700 M76720	M76700 M76720	L
Dysplasia / CIN NOS		M74000	M67015	L
CIN I (LSIL1) (VAIN I when used with T81/ T82000)		M74006	M67016	L
CIN II (HSIL2) (VAIN II when used with T81/ T82000)		M74007	M67017	H

CIN III (HSIL2)		M74008	M67017	H	
(VAIN III when used with T81/ T82000) Carcinoma in situ	or or	M67017 M67017	!M80102 M80702	M80102 !M80702	H H
Polyp		M76800	M76800	N	
Other (Morphologic abnormality, not dysplastic or malignant)		M01000	M01000	N	
Microinvasive squamous cell carcinoma		M80765	M80763	C	
Invasive squamous cell carcinoma		M80703	M80703	C	
Benign glandular atypia		M81400	M67030	N	
Glandular dysplasia		M81401	M67031	H	
Adenocarcinoma in situ		M81402	M81402	H	
Invasive adenocarcinoma		M81403	M81403	C	
Adenosquamous carcinoma		M85603	M85603	C	
Metastatic tumour		M80006	M80006	F	
Undifferentiated carcinoma		M80203	M80203	C	
Sarcoma		M88003	M88003	C	
<b>Other codes accepted</b>	<b>Code stored on register</b>	<b>1986 Code</b>	<b>1993 Code</b>	<b>AbnType<sup>3</sup></b>	
Carcinosarcoma	M88003	M89803	M89803	E	
Choriocarcinoma	M80003	M91003	M91003	E	
Miscellaneous primary tumour	M80003	M80003	M80003	E	
Small cell carcinoma	M80003	M80413	M80413	E	
Malignant tumour, Small cell type	M80003	M80023	M80023	E	
Melanoma	M80003	M87203	M87203	E	
Other primary epithelial malignancy	M80003	M80103	M80103	E	

**Table 41: NCSP-R Histology Codes**

*Notes:*

1. *LSIL*      *Low grade squamous intraepithelial lesion*
2. *HSIL*      *High grade squamous intraepithelial lesion*
3. *Abn Type*      *Abnormality type used by the register see **Error! Reference source not found.** below for the key to these codes. This is derived by the Register and is not sent in the message.*

Two variations of Specimen/Procedure codes will be accepted, either use the SNOMED **procedure code** detailed in the first table below, or a **specimen type code** detailed in the second table below.

Procedure Code	1986	1993
Hysterectomy	P11001 or P11101	P83350 or P83353 or P83360 or P83380
Partial hysterectomy with cervical component	P11041	P83352
Biopsy - Diagnostic	P11481 or P11541	P83425
Biopsy - Treatment e.g. LLETZ, Laser, Cone	P11011 or P11411 or P11461	P83401 or P83420 or P83423

**Table 42: SNOMED Procedure Code**

Specimen Type	
Either enter a single character or up to 6 characters as specified.	
Hysterectomy	H or HYSTER
Partial hysterectomy with cervical component	S or PARTIAL
Biopsy - Diagnostic	B or BIOPSY D or DIAGNO
Biopsy - Treatment e.g. LLETZ, Laser, Cone	T or TREATM
Polyp	P or POLYP

**Table 43: 99NZHISPEC Specimen Type Code**

### 3.3.2 SNOMED Code Rules for Reporting Cervical Histology Results

Only codes related to the cervix or vagina should be reported to the National Cervical Screening Programme - Register (NCSP-Register).

All hysterectomies, where the cervix is also removed, should have the code related to the cervix reported to the NCSP-Register.

Unsatisfactory for diagnosis' code (M-09000 in 1986 version, M-09010 in 1993 version) should be sent only if all results had an unsatisfactory adequacy and there is no diagnosis possible.

### 3.3.3 Example

```
MSH|^~\&|AcmeGPsystem|MyGP|PMS5|MyColp|20071027091513|PKI|ORU^R01
|ROY4454|P|2.4^NZL^1.0<cr>
PID|1||AAA1234^^NHI^NZLMOH||Hamilton^Gertrude^^Mrs||19710212||F||11^New Zealand
European/Pakeha^99NZETH|20 Cameron Road^^Tauranga <cr>
OBR|1|207145114957|207145114957|29757-2^Histology Studies^LN|||200606271633||
|||200606291633|12941^DOCTOR^Ordering^M^Dr^^CS
|12941^DOCTOR^Ordering^M^Dr^^CS|||200606281400||PAT|C|||NA002302^DOCTOR^Copy
To^M^Dr^^CS|||S134^^CS^^AK^^CS^^
```

OBX|1|CE|22633-2^Site of Origin^LN||T82000^Vagina^SNM-1993|||||F  
OBX|2|CE|19763-2^Specimin Source^LN||P^Polyp^99NZHISPEC|||||F  
OBX|3|CE|22637-3^Histo diagnosis^LN|1|M60000^SNM-1993|||||F  
OBX|4|CE|22637-3^Histo diagnosis^LN|2|M40000^SNM-1993|||||F  
OBX|5|CE|22637-3^Histo diagnosis^LN|3|M76700^SNM-1993|||||F  
OBX|6|CE|22637-3^Histo diagnosis^LN|4|M67015^SNM-1993|||||F

## 4 REPORTING ADDITIONAL INFORMATION USING HL7 MESSAGING

### 4.1 Recommended Reporting Method

Additional information is sent in messages using the following LOINC codes in OBR/OBX groups. One exception is Procedures using PR1 segments (see section 4.2). All OBX for one type of information must be reported under one OBR. For example the HPV test type and result must be reported using one OBR. All dates for the start or finish of the events listed below are recorded in OBR-7 except for delivery date for pregnancy status.

HPV test results can be reported as part of a cytology result message, in which case OBR-24 will contain the code CP or if it is reported on its own then the code will be OTH. Note that in either case, the HPV test result information must within its OBR segment group.

See Table 3 above for a summary of what information is carried in each message type.

Information	OBR-4	OBX-3	OBX-5
Pregnancy	1149-6 Pregnancy status	11778-8 Delivery Date If Date not available then omit the OBX segment. It will calculated as OBR-7 + 12 months	Date (use HL7 DT type)
Exposure to DES in the womb	14064-0 Diethylstilbestrol	14064-0 Diethylstilbestrol	Use HL7 table 0136 (Y or N) If the value of N is chosen then it must be accompanied by an NTE justifying the change.
HPV	11481-9 Human Papilloma Virus Identified	8100-0 HPV Test Type	Use Table 45: 99NZHPVTYP HPV Test Type below or may be reported as a second repeated field 17 in the preparation techniques segment.
		19772-3 Preparation Techniques	Use Table 37 subset of Bethesda codes
		Specimen taker ID	Recorded in field 10 of the OBR segment if this is missing OBR-16 will be used.
		Product type	Recorded in field 17 of the OBX segment and is a value from Table 38
		HPV Test Result 11481-9 Human Papilloma Virus Identified	Specific subtype identified (if known). Use Table 47: 99NZHPVST HPV Test Results below otherwise use Table 46: 99NZHPVDT HPV

			Detected below
HPV Vaccinated	11370-4 Immunisation Status	38890-0 Vaccine component type	Product code (see note below on use of product codes)
		30952-6 Date and time of vaccination	Date (use HL7 DT type)
Immuno suppressed	28634-4 Miscellaneous Studies	Immune function status XNZ0510 (note this is not a LOINC code but a NZPOCS)	F-00D60 (SNOMED 1993) or use HL7 table 0136 (Y or N)

**Table 44: Additional LOINC Codes**

#### 4.1.1 HPV Test Type

The code for the test type used for HPV testing is selected from the table below

Code	Commercial Preparation
DGHC2	Digene HC2
AMPCR	Amplicor HPV PCR
OTHER	Other

**Table 45: 99NZHPVTYP HPV Test Type**

#### 4.1.2 HPV Detected

The code for the result of a HPV test is selected from the table below

Code	Detection Status
D	Detected
ND	Not Detected
INV	Invalid

**Table 46: 99NZHPVDT HPV Detected**

#### 4.1.3 HPV Test Results

The code for the results from HPV testing is selected from the table of selected NCSP-R codes below.

HPV Sub Type Code	Description
16	Human Papilloma Virus subtype 16
18	Human Papilloma Virus subtype 18
31	Human Papilloma Virus subtype 31
33	Human Papilloma Virus subtype 33
35	Human Papilloma Virus subtype 35

39	Human Papilloma Virus subtype 39
45	Human Papilloma Virus subtype 45
51	Human Papilloma Virus subtype 51
52	Human Papilloma Virus subtype 52
56	Human Papilloma Virus subtype 56
58	Human Papilloma Virus subtype 58
59	Human Papilloma Virus subtype 59
68	Human Papilloma Virus subtype 68

**Table 47: 99NZHPVST HPV Test Results**

Note if multiple sub types are detected they are to be sent in separate OBX segments

#### 4.1.4 Use of product codes

The code for the products for HPV immunisation is selected from the table below.

Code	Coding System
MIMS	MIMS Code
PH	Pharma Code

**Table 48: 99NZMEDCD HPV Immunisation Product Code**

In the case of Mims codes the product, form and strength codes must be concatenated to derive a unique code. For example Gardasil has a Product code of 2195, a form code of 01 and strength code of 01 giving a unique code of 21950101 whereas the Pharma code (2212625) is unique for this product, form and strength. The Mims code for Cervarix is 78130101. These codes are the only ones supported at this time and any others that are introduced will be reported as other.

#### 4.1.5 Example Messages

##### 4.1.5.1 Pregnancy Status

```
OBR|1|ORD000016|07877|1149-6^Pregnancy Status^LN|||200607011633
|||||200607051633||013427^DOCTOR^Ordering^M^Dr^^ HI
|||||OTH|F|||||||||||||||||FZZ999|FXX888
OBX|1|DT|11778-8^Delivery Date^LN|
|20081224|||||F
```

##### 4.1.5.2 Exposure to DES in the Womb

```
OBR|1|ORD000016|07877|14064-0^Diethylstilbestrol^LN|||200607011633
|||||200607051633||013427^DOCTOR^Ordering^M^Dr^^ HI
|||||OTH|F|||||||||||||||||FZZ999|FXX888
OBX|1|CE|14064-0^Diethylstilbestrol^LN|
|Y^Yes^HL70136|||||F
```

##### 4.1.5.3 HPV Identified

Full Result

```
OBR|1|ORD000016|07877|11481-9^Human Papilloma Virus Identified^LN|||200607011633
|||||200607051633||013427^DOCTOR^Ordering^M^Dr^^ HI
|||||CP|F|||||||||||||||||FZZ999|FXX888
OBX|1|CE|8100-0^HPV Test Type^LN|
```

|DGHC2^Digene HC2^99NZHPVTYP|||||F|||||  
 OBX|2|CE|19772-3^Preparation Techniques^LN|| LBC^Liquid Based Collection^BTH-2001  
 ...|||||F||20070701||013427^DOCTOR^Ordering^M^Dr^HI||SRPTH^SurePath^99NZCLBCP  
 OBX|3|CE|11481-9^Human Papilloma Virus Identified^LN  
 |18^ Human Papilloma Virus subtype 18^99NZHPVST|||||F

Or negative result

OBR|1|ORD000016|07877|11481-9^Human Papilloma Virus Identified^LN||200607011633  
 |||||200607051633||013427^DOCTOR^Ordering^M^Dr^HI  
 |||||CP|F|||||||||||||FZZ999|FXX888  
 OBX|1|CE|8100-0^HPV Test Type^LN|  
 |DGHC2^Digene HC2^99NZHPVTYP|||||F|||||  
 OBX|2|CE|19772-3^Preparation Techniques^LN|| LBC^Liquid Based Collection^BTH-2001  
 ...|||||F||20070701||013427^DOCTOR^Ordering^M^Dr^HI||SRPTH^SurePath^99NZCLBCP  
 OBX|3|CE|11481-9^Human Papilloma Virus Identified^LN  
 |ND^ Not detected^99NZHPVDT|||||F

Alternative Full Result using repeated OBX-17

OBR|1|ORD000016|07877|11481-9^Human Papilloma Virus Identified^LN||200607011633  
 |||||200607051633||013427^DOCTOR^Ordering^M^Dr^HI  
 |||||CP|F|||||||||||||FZZ999|FXX888  
 OBX|1|CE|19772-3^Preparation Techniques^LN|| LBC^Liquid Based Collection^BTH-2001  
 ...|||||F||20070701||013427^DOCTOR^Ordering^M^Dr^HI||SRPTH^SurePath^99NZCLBCP~  
 DGHC2^Digene HC2^99NZHPVTYP  
 OBX|2|CE|11481-9^Human Papilloma Virus Identified^LN  
 |18^ Human Papilloma Virus subtype 18^99NZHPVST|||||F

Synopsis Result

OBR|1|ORD000016|07877|11481-9^Human Papilloma Virus Identified^LN||200607011633  
 |||||200607051633||013427^DOCTOR^Ordering^M^Dr^HI  
 |||||LAB|F|||||||||||||FZZ999|FXX888  
 OBX|1|CE|11481-9^Human Papilloma Virus Identified^LN |  
 |18^ Human Papilloma Virus subtype 18^99NZHPVST|||||F

#### 4.1.5.4 HPV Vaccinated

OBR|1|ORD000016|07877|11370-4^Immunisation Status^LN||200607011633  
 |||||200607051633||013427^DOCTOR^Ordering^M^Dr^HI  
 |||||OTH|F|||||||||||||FZZ999|FXX888  
 OBX|1|CE|38890-0^Vaccine Component Type^LN|  
 |21950101^Gardasil^MIMS|||||F  
 OBX|2|DT|30952-6^Date and Time of Vaccination^LN|  
 |20071216|||||F

#### 4.1.5.5 Immuno Suppresses Status

OBR|1|ORD000016|07877|28634-4^Miscellaneous Studies^LN||200607011633  
 |||||200607051633||013427^DOCTOR^Ordering^M^Dr^HI  
 |||||OTH|F|^20001226|||||||||FZZ999|FXX888  
 OBX|1|CE|XNZ0510^Imune function status^NZPOCS|  
 |Y^ Yes^HL70136|||||F

## 4.2 Procedures Performed

Procedures such as Hysterectomies are reported in a PR1 segment which can be included in a REF message but not an ORU. The procedures will be mapped using ICD10 or READ codes

#### **4.2.1** *Example*

PR1|1||35653-01^ Total abdominal hysterectomy^ICD-3||20071231|p

## 5 AUTOMATED SCREENING HISTORIES USING HL7 MESSAGING

### 5.1 Cervical Screening History Enquiries

This section must be read in conjunction with the following documents published by HISO.  
 Pathology and Radiology Messaging Standard (section 6)  
 Pathology and Radiology Implementation Guide

Requests for a screening history are submitted using a Query by Parameter (QBP) message. The response is a Segment pattern response (RSP) containing a single OBR/OBX group containing a PDF rendition of the history.

The names of the input and output fields are not specified in the query message, but by the Conformance Statement, identified by *QPD-1-message query name*. The *MSH-9.2-trigger event* and the *QPD-1-message query name* are this query's only distinguishing elements. The requesting system must refer to this query's Conformance Statement to learn more about the input and output fields.

### 5.2 Cervical Screening History (display format) Conformance Statement

The "Cervical Screening History" query returns laboratory results and interpretation information in a PDF file, formatted in one of the NCSP-R report layouts; there will initially be two formats available, one for laboratories and one for colposcopists, as determined by the requesting facility.

The NCSP-R will accept single-person queries only; batch mode queries will not be supported. The NCSP-R requires demographic details in addition to the patient identifier supplied in the query parameter list.

#### 5.2.1 Conformance Statement

Query Statement ID (Query ID=Z70):	Z70
Type:	Query
Query Name:	Lab Results History (display format)
Query Trigger (= MSH-9):	QBP^Z70^QBP_Q11
Query Mode:	Both
Response Trigger (= MSH-9):	RSP^Z72^RSP_K11
Query Characteristics:	Patient NHI must be supplied and supported by demographic information
Purpose:	To retrieve patient screening history as a PDF
Response Characteristics:	
Based on Segment Pattern:	ORU_R01

Table 49: Conformance Statement

QBP^Z70^QBP_Q11	Query Grammar: QBS Message
MSH	Message Header Segment
QPD	Query Parameter Definition
RCP	Response Control Parameter
[ DSC ]	Continuation Pointer

**Table 50: Query Grammar**

RSP^Z72^RSP_K11	Response Grammar:	Group Control	Comment	Support Indicator
MSH	Message Header			
MSA	Message Acknowledgement			
[ERR]	Error			
QAK	Query Acknowledgement			
QPD	Query Parameter Definition			
{			Query Result Cluster	
[		PIDG	Begin PID Group	
PID	Patient Identification			
]			End PID Group	
		ORCG	Begin ORC Group	
OBR	Observations Report ID			
{		OBXG	Begin OBX Group	
[OBX]	Observation/Result			
}			End OBX Group	
}			End Query Results	
[DSC]	Continuation Pointer			

**Table 51: Response Grammar**

**5.2.1.1 QPD Input Parameter Specification**

Field Seq (Query ID=Z70)	Name	Key/Search	Len	Type	Opt	Table	Element Name
1	MessageQueryName		60	CE	R		
2	QueryTag		32	ST	R		

Field Seq (Query ID=Z70)	Name	Key/ Search	Len	Type	Opt	Table	Element Name
3	Patient Id	S	250	CX	R		PID-3: Patient Identifier
4	Patient Name		250	XPN	O		PID.5 Patient Name
5	DOB		26	TS	O		PID.8
6	Address		250	XAD	O		PID.11 Patient Address
7	Requestor Id	S	250	XCN	R		OBX.16 Responsible Observer
8	Requestors Facility Code		50	CE	R		

**Table 52: QPD Input Parameter Specification**

**5.2.1.2 QPD Input Parameter Field Description and Commentary**

Input Parameter (Query ID=Z70)	Component Name	Data Type	Description
MessageQueryName		CE	Must be valued <b>Z70</b> ^Cervical Screening history (display format)^ <b>HISO</b> .
QueryTag		ST	Should be unique to each query message instance. (recommend it should be a unique id that exists over time, suggest lab reqno + now dt)
PatientId		CX	Patient for whom history is requested (Required)
Patient Name		XPN	Required
DOB		TS	Required
Address		XAD	Patient address where available
Requestor		XCN	The person requesting the history. Maybe the person doing registration or the scientist reading the slides.
Requestors Facility Code		CE	The facility the person belongs to. The preferred code is the HPI code otherwise the NSU code.

**Table 53: QPD Input Parameter Field Description and Commentary**

**5.2.1.3 RCP Response Control Parameter Field Description and Commentary**

Field Seq (Query ID=Z70)	Name	Component Name	Len	Data Type	Description
1	Query				
1	Query Priority		1	ID	(D)eferred or (I)mmediate.

Field Seq (Query ID=Z70)	Name	Component Name	Len	Data Type	Description
					Default is <b>I</b> . NCSP-R will treat as Immediate mode regardless of entry in this field
2	Quantity Limited Request		10	CQ	
		Quantity		NM	Number of units (specified by the following component) that will be returned in each increment of the response. If no value is given, the entire response will be returned in a single increment.
		Units		CE	<b>CH</b> aracters, <b>L</b> ines, <b>Pa</b> ges, or <b>Reco</b> rd <b>s</b> . Default is <b>LI</b> .
3	Response Modality		60	CE	<b>R</b> eaL time or <b>B</b> atch. Default is <b>R</b> . NCSP-R will treat as Real time mode regardless of what is in this field.
7	Segment group inclusion		256	ID	What segment group(s) are to be included. If this field is not valued, all segment groups will be included.

**Table 54: RCP Response Control Parameter Field Description and Commentary**

*Note: Values the NCSP-R does not accept will be ignored and extra parameters such as RCP-7 (Segment Group) will not be processed. If given incorrect or extra values, the NCSP-R system will use the above default values.*

### 5.2.2 Example Message where requestor is not registered against an assigning authority.

```
MSH|^~\&|Sample Lab System|Sample Lab|NCSP-R|NSU|200607121633
  ||QBP^Z70| msgid 003|P|2.4
QPD|Z70^Cervical Screening history (display
format)^HISO|061234567200612120800
  |DZA7937^^NHI^NZLMOH|SMITH^SUSAN|19581023||^SMITH John
^^^Cytologist Degree^^L|F12345^Acme Lab^HF
RCP|I||R|
```

### 5.2.3 NCSP-R Query Response Message

#### OBX-5 Embedded Data

If the Base 64 encoded data to be embedded in the HL7 message is split across multiple OBX segments, the OBX segments are ordered by the sequential Set-Id, in OBX-1.

When an OBR segment is identified as an embedded data set, all OBX segments following that OBR will be assumed to contain sections of the embedded data, in the order of the Set-Id sequence number.

There can only be one embedded file in each OBR/OBX set.

#### OBR-2 Placer Order Number

The Query Tag from QPD-2 should be a unique value (at least for each facility). This value can be used for the Placer Order Number in the query response, for OBR-2.

#### 5.2.4 Example Message

```
MSH|^~\&|Sample Lab System|Sample Lab|NCSP-R|NSU|200607121633
||QB^Z70| msgid 003|P|2.4
QPD|Z70^Cervical Screening history (display format)^NCSP-
R|061234567200612120800

|DZA7937^^NHI^NZLMOH|SMITH^SUSAN|19581023||12ABCD^Bloggs^Fred^^^^^HI
...|F12345^Acme Lab^HF
RCP|I||R|

MSH|^~\&|Sample Lab System|Sample Lab|NCSP-R|NSU|200607121633|
|RSP^Z72| msgid 0002|P|2.4
MSA|AA| msgid 003|
QAK|061234567200612120800|OK|Cervical Screening history (display
format)||
QPD|Z70^Cervical Screening history (display format)^NCSP-
R|061234567200612120800
...|DZA7937^^NHI^NZLMOH|SMITH^SUSAN|19581023||^SMITH John
^^^Cytologist Degree^^L|F12345^Acme Lab^HF
PID|||DZA7937^^NHI^NZLMOH||SMITH^SUSAN^M||19581023|F
OBR|1||061234567|PDF|||20051027091513|||12346^Woods^D^^^HPI
OBX|1|ED|PDF^Display format in PDF^99NZATF||
|^AP^PDF^Base64^AAEIHEiwoMGDCBMqX+...||N||F
```

## 6 WEB SERVICES INTERFACE (WSI) FOR TRANSFERRING HL7 MESSAGES

This document is broken into the following parts:

**Introduction:** This introductory section

**Core Concepts:** Introduces the concepts that need to be understood to aid comprehension of the other sections.

**Technical Implementation Guide:** Provides detailed information about the interface

**Supported Cryptography Standards:** Describes the cryptographic standards that will be supported in conjunction with the security aspect of messaging.

**Technical Environment:** Describes the technical environment that will be provided by the NCSP-R for production and testing.

**Specifications & Samples:** Provides the technical specifications such as schemas, WSDL definitions, and sample files.

### 6.1 Relation to Interface Proposal Document

In early 2007 the NCSP issued a document describing a proposed web services interface for the new NCSP-Register. This document provides additional technical detail and has removed items that were originally identified as being "phase 2". This document no longer includes any proposed or future developments. The structure of the messages has also been simplified based on feedback from Health Providers.

### 6.2 Core Concepts

This section introduces the concepts that need to be understood to aid comprehension of the other sections.

#### 6.2.1 Messages

A Message in the context of the NCSR-WSI is a block of HL7 transported as the body of a SOAP messages over HTTPS. The HL7 encoded content can be anything that complies with HL7 v2.4. Multiple HL7 messages may be transported over a single web services call.

The following example illustrates a Message in the content of the NCSP-R-WSI.

```
<?xml version="1.0" encoding="UTF-8" ?>
<HL7 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:
0_public_html/WEB-INF/wsd1/hl7.xsd"
  xmlns="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0">
  <Message>
    <![CDATA[
      MSH|^~\&|AcmeGPsystem|MyGP|PMS5|MyColp|20071027091513|PKI|ORU^R01...
      PID|1||AAA1234^^NHI^NZLMOH||Hamilton^Gertrude^^Mrs||19710212||F||...
      OBR|1|ORD000016|07877|RNZ0504^Gynaecological Cytology^NZPOCS...
      OBX|1|CE|19763-2^Specimen Site ^LN||R^Cervical^BTH-2001|||||F
      OBX|2|CE|19772-3^Preparation Techniques^LN||CPS^Conventional pap...
      OBX|3|CE|19764-0^Statement of adequacy^LN||S1^The specimen is...
```

```

    OBX|4|CE|19762-4^General Categories^LN||G1^Negative for...
    OBX|5|CE|19765-7^Microscopic Observation^LN||O4^There are bacteria...
    OBX|6|CE|19773-1^Recommended followup^LN||R1^The next smear...
  ]]>
</Message>
</HL7>

```

**Note:** The HL7 content has been truncated for formatting clarity

### 6.2.2 Message Exchange

The NCSP-R-WSI exposes service methods to send HL7 messages to the NCSP-R and receive HL7 messages from the NCSP-R. This can be characterised by:

Messages to the NCSP-R can be sent by Health Providers as and when they are required.

Messages from the NCSP-R must be polled for by the Health Provider

While polling has some natural inefficiency it has the benefit that the NCSP-R provides all of the required web services. Health Providers need only act as clients to those web services (compared with two-way web services which would require Health Providers to create and expose their own web services).

### 6.2.3 Security

The NCSP-R-WSI will be secured through a combination of:

**Transport level encryption.** Messages will be sent over the Health Intranet using a HTTPS connection.

**Message level encryption.** Messages will be encrypted using WS-Security standards (refer section 6.2.4).

**Transport level authentication.** Callers will be required to present usernames, passwords (refer section 6.2.5) and certificates.

### 6.2.4 WS-Security

WS-Security provides the means to ensure confidentiality and integrity of messages are maintained during a web services call. The NCSP-R-WSI will make use of WS-Security protocols to:

- Ensure the content of messages cannot be read by intermediaries connected to the network
- Ensure the message arrives without tampering
- Authenticate the sender of the message

WS-Security will be implemented using the health network digital certificates for signing and encrypting messages. Messages will be required to contain:

- A *BinarySecurityToken* containing the Health Providers public key. This is used for identifying the originator of the message.
- An XML signature covering the entire HL7 payload of the message
- Symmetric encryption of the HL7 payload.

More detailed information is provided in section 6.3

### 6.2.5 Service Request Authentication

In addition to the message-level security offered by WS-Security, the NCSP-R will require authentication at the transport layer. This means that the caller must supply:

- Username and password in the SOAP request
- Digital certificates at the HTTPS transport layer
- Health Certificates are to be used for the request authentication.

### 6.2.6 Versioning

The web service contains a version number in the URN and this will be reflected in the service end-point. In the event that a new version is released this will have a new service end-point and the old service will be maintained for a period negotiated between the NCSP-R and Health Providers.

## 6.3 Technical Implementation Guide

This section provides the details required for Health Providers to implement systems to connect to the NCSP-R-WSI.

### 6.3.1 NCSP-R-WSI Schema

The schema for the NCSP-R-WSI is shown pictorially in Figure 1 and included in XML Schema Definition (XSD) format in section 6.6.1

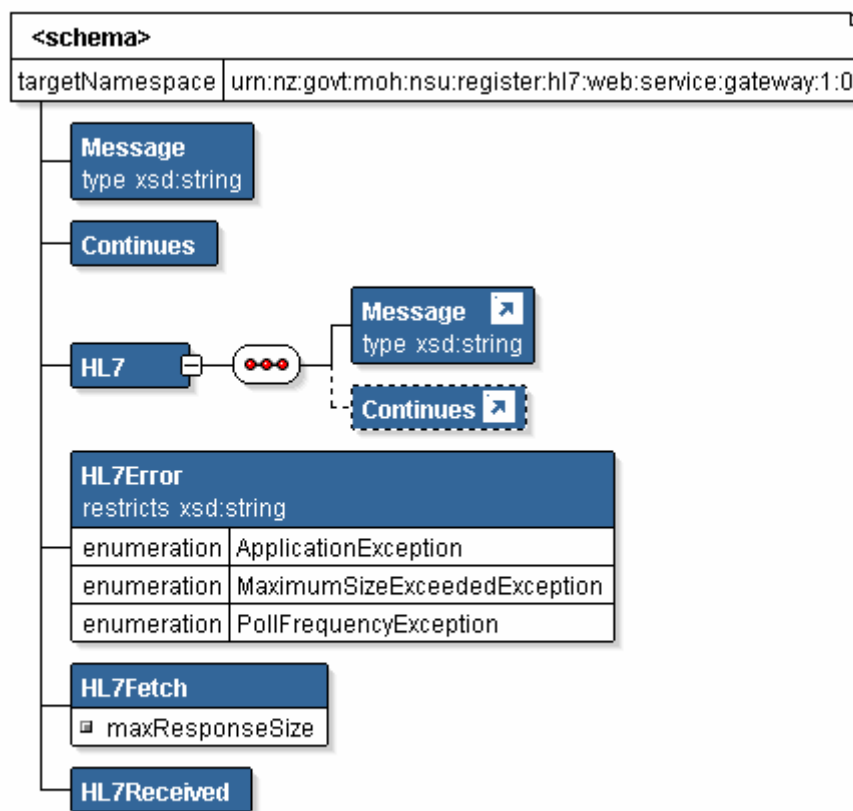


Figure 1: HL7 Schema

The schema has three main elements of interest:

**HL7:** The HL7 element defines the structure for HL7 message content sent to/from the NCSP-R. It contains two elements:

- **Message.** This element contains the actual text of the HL7 to be sent. It is recommended that the HL7 content be wrapped in a CDATA section.
- **Continues.** This element indicates, in a request scenario, that the NCSP-R has additional messages waiting for the caller. This can occur if the maximum message size exceeds the amount of data waiting for the caller on the NCSP-R Register.

**HL7Fetch:** The HL7Fetch element defines the format of a request for HL7 messages from the NCSP-R.

**HL7Error:** This enumeration defines the three types of errors that may be returned by the NCSP-R-WSI. These are described in more detail in the individual services that may cause them. Examples messages are provided in the sections that describe the individual messages.

### 6.3.2 NCSP-R-WSI WSDL

The NCSP-R-WSI WSDL is provided in section 6.6.2 on page 61. It defines two service endpoints:

**submitHL7** – used to send HL7 messages to the NCSP-R.

**fetchHL7** – used to collect messages from the NCSP-R.

### 6.3.3 WS-Security

All messages are protected using the WS-Security standards and must include:

- Payload encryption.
- Symmetric key data
- Binary Security Token
- Payload Signature

These are described in the subsections that follow.

In describing the various WS-Security requirements, examples from a compliant SOAP message have been supplied. These are only for illustrative purposes. Health Providers should find that their own web services frameworks will generate all of this complex code automatically when configured for WS-Security support.

Throughout the examples the following schema namespaces apply:

- xmlns:wss="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
- xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"

#### 6.3.3.1 Payload Encryption

Payload encryption is to be performed using a symmetric encryption algorithm (refer to section 6.4.4 on page 60 for permitted encryption algorithm). The standard allows some or all of the body of the SOAP message to be encrypted. For the NCSP-R-WSI the entire payload must be encrypted.

Below is a fragment of a SOAP message illustrating the expected form of a properly encrypted SOAP message.

```
<env:Body wsu:Id="P0m2cHk5IGiZUxQrUQmjzQ22" xmlns:wsu="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <xenc:EncryptedData xmlns="http://www.w3.org/2001/04/xmlenc#"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#" Type="http://www.w3.org/2001/04/xmlenc#Content"
Id="_XIQwomishy3oxvc8CHNAuQ22">
  <xenc:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#tripledes-cbc"/>
  <xenc:CipherData>
<xenc:CipherValue>mrVHUjw152aZedM9h1a05E+b1+/mgBpY3oqGf2OzewYDj8LZJfdd/0+zKqSI9TJkzJpqbTMstEwj
54tNX8buBJSbtRxG1xxVaV98BoDgU4gsCOJwfIPCeJNQJd/8ffyB9XZNeZH1nwPRVEbHE5COkaDrd2sBVKE3gsunQEEWtp
ugJ5PVaA8aEdRo1sUEJunP1abK+cf2yZvv5TyrN1b0bqObxRIyBEzL/OGMyYf1CoZwHVzOmGg964irivk/jX2IL2ANVMrM
IDV+bd3q5pBT8r4funuoJ2YaAQK5CkI0uWSSRdehb/sqOv8oHB1kUK9DaFv0d7B95EPG7g0yWFDuMU0NCBTy0sF2/Z1mNg
zxxg+W9NhrSfkmED2eg8OHquYiVgrhoCWqi0zwsS1bn9HuTCXtJ+z0DdauULQAI/bGJollxKtLWto7gzU4qn14y4Pht/7D
BgM04heOcox15qUOTesBMUM0IiEWNSo9IGzoZ2EA0i2eyGXx7Q==</xenc:CipherValue>
  </xenc:CipherData>
  </xenc:EncryptedData>
</env:Body>
```

### 6.3.3.2 Symmetric Key Data

Where payload encryption is used (i.e. where there is a payload) symmetric key information must also be passed. This occurs in the WS-Security headers in the SOAP headers.

An example of the required content is shown below:

```
<xenc:EncryptedKey xmlns="http://www.w3.org/2001/04/xmlenc#"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#">
  <xenc:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#rsa-1_5"/>
  <dsig:KeyInfo xmlns:dsig="http://www.w3.org/2000/09/xmldsig#">
    <wsse:SecurityTokenReference xmlns:wsse="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-
1.0.xsd">
      <wsse:Reference xmlns:wsse="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
URI="#a1TWVwEd7BzjIqc3CyjpXBQ22" ValueType="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-x509-token-profile-1.0#X509v3"/>
    </wsse:SecurityTokenReference>
  </dsig:KeyInfo>
  <xenc:CipherData>
    <xenc:CipherValue>09QgTv8sZ0gY7UkMqhJQzss+JQn15YBxsYPZHa6PuNAhkkI1ON362iD16mYbdeV9x1URiV7
JRWlu4oTm+tJ0yUM6fkEZq5J55eMiv89dkxdiwi+ZAgIung6ZhpDrW0gl6VDu6PNjA3aLqSLcAazuOJR43Nrn1RsO
KVkSdb39yLU=</xenc:CipherValue>
  </xenc:CipherData>
  <xenc:ReferenceList>
    <xenc:DataReference URI="#_XIQwomishy3oxvc8CHNAuQ22"/>
  </xenc:ReferenceList>
</xenc:EncryptedKey>
```

### 6.3.3.3 Binary Security Token

The binary security token is an additional assertion about the sender of the message. This should contain the public key from the callers Health Certificate. It should be encoded using "Base64Binary" and be of the type "X509v3". Refer to section 6.4.2 for more information on acceptable binary tokens.

An example of a Binary Security Token section is shown below:

```
<wsse:BinarySecurityToken xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
ValueType="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-x509-token-profile-
1.0#X509v3" EncodingType="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-
message-security-1.0#Base64Binary" wsu:Id="a1TWVwEd7BzjIqc3CyjpXBQ22"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">MICTDCCAbUCBEYAu+MwDQYJKoZIhvcNAQEFBQAwbTElMAkGA1UEBhMCVVmxEDA0BgNVBAgTB0dlb3Jn
aWEtETAPBgNVBAcTCGRhdmVib211MRAdDgYDVQOKEwdkYXZlT3JnMREwDwYDVQQLEWhkYXZlRGVwdDEUMBIGA1UEA
xMLRGF2ZSBQcmFmZ0ZlIwHhcNMDCwMzIxMDUwMDE5WhcNMDCwNjE5MDUwMDE5WjBtMQswCQYDVQQGEwJVUzEQMA4GA1
UECBMHR2VvcmdpYTERMA8GA1UEBxMIZGF2ZUhhbWVudWUxEDA0BgNVBAoTB2RhdmVpcmcxETAPBgNVBAcTCGRhdmVEZXB
OMRQwEgYDVQQDEwEYXZlIFByeXNlcjCBnzANBgkqhkiG9w0BAQEFAAOBjQAwgYkCgYEA3YaQkYZe9iWNCWbqpKz9
wLDRq0dVtYmj4XrYjxvVDYhlmmlbs6ZohUj5QTSQXFAPlhEH8X0o+2YGua0brpgz+fa+aFwMwmSilng3pDUMSO3PP
y9tGbz+wjOgOdY/d26vwzmFL38wgUcZorW0f03X9HBXWwgZH96Wctz/WrP3B/ECaWEAATANBgkqhkiG9w0BAQUFAA
OBgQBCKFCHROJoLgZF/16k3UTKuJ1rwC1sBxUy/rLBOOMtUFoCoHm0AOIG5Fy9qFvRt1/AZbzI0YK1xc/lKWmSooX
nyq2YtkOgU4kSRj4kyq8dTbQqj2SAhW6rDJ9yqQcXpnQXIDM4IT5u/E4Jp83szcbmPq9qYQN/t1LXTZ7YqAm/pA==
</wsse:BinarySecurityToken>
```

### 6.3.3.4 Payload Signature

The payload must also be signed to protect against modification. This requires a digital signature element in the WS-Security. The digital signature covers the entire payload. Refer to section 6.4.1 for acceptable signature methods.

The following is an example of the signature element from a SOAP message

```
<dsig:Signature xmlns="http://www.w3.org/2000/09/xmldsig#"
xmlns:dsig="http://www.w3.org/2000/09/xmldsig#">
  <dsig:SignedInfo>
    <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-
```

```

c14n#"/>
  <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
  <dsig:Reference URI="#P0m2cHk5IGiZUxQrUQmjzQ22">
    <dsig:Transforms>
      <dsig:Transform Algorithm="http://www.w3.org/2001/10/xml-exc-
c14n#"/>
    </dsig:Transforms>
    <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
    <dsig:DigestValue>2LjJcPMHS3G1ZffX+Q1AycRR93Y=</dsig:DigestValue>
  </dsig:Reference>
  </dsig:SignedInfo>
  <dsig:SignatureValue>Kp0PFm1u7xGsblCqN2qAzFG1jn7MZU6kEEJSOUfY6DJ5wBbiq+64HJjdMiaVD
KL1thafwGy/vEb1mi3vRkfmC35TlIo5TsSMFaTYWDP05swdEHdJqHZRawJ5OAE1ZSq3z9D6YS9zp0OHJkxfRy38fq
/mD2hmwwT2FV6eh5CTvMw=</dsig:SignatureValue>
  <dsig:KeyInfo>
    <wsse:SecurityTokenReference xmlns:wsse="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-
1.0.xsd">
      <wsse:Reference xmlns:wsse="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
URI="#_8vDbpV6sArcdQ9STwJnLdw22" ValueType="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-x509-token-profile-1.0#X509v3"/>
    </wsse:SecurityTokenReference>
  </dsig:KeyInfo>
</dsig:Signature>

```

### 6.3.4 Services

Services are implemented using the Document Literal style.

#### 6.3.4.1 Submit HL7 Service

##### Introduction:

The *submitHL7* service is used to send a HL7 message from the Health Provider to the NCSP-R. The service passes a block of HL7 to the NCSP-R. That block may contain one or more HL7 messages in accordance with normal HL7 practice. The block is not considered to be a batch and multiple messages will be treated as if they had arrived independently.

##### Service Definition

The service takes a single document with a *HL7* element as the root (refer to the Schema) and returns either a document with a *Received* element or an error.

The following example shows a sample document passed into the *submitHL7* service (note that the HL7 lines have been truncated for formatting clarity).

##### Example:

```

<?xml version="1.0" encoding="UTF-8" ?>
<HL7 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0
public_html/WEB-INF/wsdl/hl7.xsd"
  xmlns="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0">
  <Message>
    <![CDATA[
      MSH|^~\&|Sample Lab System|Sample Lab|NCSP-R|...
      PID|X002715^L^~BVD4316^NHI^NZLMOH^DOE^JANE^(JANIE)|19720831|...
      ORC|ORD000012|LAB000012|||200607121633||013427^DOCTOR^...
      OBR|1|ORD000012|LAB000012~123|26438-2^Cytology Studies^LN||...
      OBX|1|CE|19764-0^Statement of adequacy^LN||UA^The specimen is ...
      MSH|^~\&|Sample Lab System|Sample Lab|NCSP-R|NSU|200607121633||ORU^R01...
      PID|X002894^L^~LLX0159^NHI^NZLMOH^SMITH^JANE ...
      ORC|ORD000026|LAB000099|||200607121333||013427^DOCTOR^Ordering^M^Dr^NZMC
      OBR|1|ORD000012|LAB000026~144|26438-2^Cytology Studies^LN||...
      OBX|1|CE|19764-0^Statement of adequacy^LN||UA^The specimen is...
    ]]>
  </Message>
</HL7>

```

If the submit is a success the caller will receive an HL7 Received document. This is not an HL7 acknowledgement – it is only a transport level acknowledgement that the message was successfully transport to the NCSP-R.

The following example shows a sample HL7Received document:

```
<?xml version="1.0" encoding="UTF-8" ?>
<HL7Received xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0
public_html/WEB-INF/wsd1/hl7.xsd"
  xmlns="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0"></HL7Received>
```

### Service Exceptions

The submit may return one of two application level exceptions which are returned as SOAP Faults (in addition to any transport level SOAP faults that may occur)

#### Maximum Size Exceeded Exception

<b>Name:</b>	MaximumSizeExceededException
<b>Meaning:</b>	The HL7 block sent to the NCSP Register exceeds the maximum size permitted. Refer to section 6.5.1 for the maximum size permitted by the NCSP- Register.
<b>NCSP- Register Behavior:</b>	The NCSP- Register will have discarded the entire message and none of the HL7 content will be processed.
<b>Remedy:</b>	Break the message down into smaller blocks and resend as multiple messages

#### Application Exception

<b>Name:</b>	ApplicationException
<b>Meaning:</b>	The NCSP- Register has encountered an unexpected exception condition and is unable to process the request.
<b>NCSP- Register Behavior:</b>	The NCSP- Register will have discarded the entire message and none of the HL7 content will be processed.
<b>Remedy:</b>	Retry the send. If there are repeated failures contact the NCSP- Register support staff.

### 6.3.4.2 Fetch HL7 Service

#### Introduction

The *fetchHL7* service is used by the health provider to retrieve any HL7 messages generated by the NCSP-R intended for them. It is the means by which the health provider can poll the NCSP-R to retrieve HL7 messages.

#### Service Definition

The service takes as input a document specifying the maximum size of message supported by the caller and returns a document with an *HL7* element as the root (refer to the Schema) or an error. The *maxResponseSize* attribute refers to the size of the HL7 content only. The WS-Security encryption and SOAP headers will add to the total.

The following example illustrates the request document:

```
<?xml version="1.0" encoding="UTF-8" ?>
<HL7Fetch xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0
public_html/WEB-INF/wsd1/hl7.xsd"
  xmlns="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0"
  maxResponseSize="1048576"></HL7Fetch>
```

A successful response will contain an XML document with an *HL7* element as the root (refer to the Schema) as illustrated by the following example:

```
<?xml version="1.0" encoding="UTF-8" ?>
<HL7 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0
public_html/WEB-INF/wsd1/hl7.xsd"
  xmlns="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0">
  <Message>
    <![CDATA[
MSH|^~\&|NCSP-R|NSU|Sample Lab System|Sample
Lab|200704181930||ACK^R01|169729137|P|2.4^NZL^1.0
MSA|AR|PMS000022|The incoming message has been rejected due to an error.
ERR|OBR^3^46^&&HL70357~OBR^3^47^&&HL70357
]]>
  </Message>
</HL7>
```

If the NCSP-R has additional messages waiting then a “continues” tag will be appended to the end of the result. This can occur if:

- The amount of HL7 data stored by the NCSP- Register exceeds the *maxResponseSize* attribute supplied by the caller.
- The amount of HL7 data stored by the NCSP- Register exceeds the internal message size limit set by the NCSP- Register.

A caller may immediately initiate a second fetchHL7 request when a “continues” element is returned by the NCSP- Register.

If the NCSP- Register has no messages waiting then an empty document will be returned as illustrated by this example:

```
<?xml version="1.0" encoding="UTF-8" ?>
<HL7 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0
public_html/WEB-INF/wsd1/hl7.xsd"
  xmlns="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0">
  <Message/>
</HL7>
```

### Service Exceptions

The fetch may return one of two application level exceptions which are returned as SOAP Faults (in addition to any transport level SOAP faults that may occur).

#### Poll Frequency Exception

<b>Name:</b>	PollFrequencyException
<b>Meaning:</b>	The polling request is more frequent than permitted by the NCSP-R-WSI. Refer to section 6.5.1 for the maximum polling period.
<b>NCSP-Register Behavior:</b>	The NCSP- Register will not process the request and no data will be returned.
<b>Remedy:</b>	Wait until the polling period has elapsed and then make a subsequent request.

#### Application Exception

<b>Name:</b>	ApplicationException
<b>Meaning:</b>	The NCSP- Register has encountered an unexpected exception condition and is unable to process the request.
<b>NCSP- Register Behavior:</b>	The NCSP- Register will have discarded the entire message and none of the HL7 content will be processed.
<b>Remedy:</b>	Retry the send. If there are repeated failures contact the NCSP- Register support staff.

## 6.4 Supported Cryptography Standards

This section describes the supported standards for cryptography in the web services solution. The NCSP-R have selected a minimal set of standards that are compliant with the Health Intranet [1] standards.

### 6.4.1 Digital Signatures

Digital Signatures must be created using the SHA-1 digest.

### 6.4.2 Asymmetric Keys

The Asymmetric Keys must use:

- RSA encryption algorithm
- 1024 bit (or longer) keys

For NCSP-R-WSI expects the asymmetric keys to be those of the callers Health Certificate - which complies with this standard.

### 6.4.3 Asymmetric Encryption

Asymmetric Encryption must use:

- RSA encryption algorithm
- 1024 bit (or longer) keys
- Cipher-Block Chaining (CBC)
- PKCS #5 Padding

### 6.4.4 Symmetric Encryption

Symmetric Encryption must use:

- Triple DES algorithm

## 6.5 Technical Environment

This section describes the technical environment that will be provided by the NCSP-R for production and testing.

### 6.5.1 Limits

The following limits have been set for the NCSP-R-WSI:

<b>Polling Frequency</b>	60 seconds
<b>Message size</b>	10 Mb

## 6.5.2 Health Intranet

All web service calls must come over the Health Intranet and Health Providers wanting to use the NCSP-R HL7 web services interface will need to comply with all of the network standards associated with the Health Intranet.

Refer: <http://www.hin.moh.govt.nz/pages/standards.htm> for more information

## 6.6 Specifications & Samples

### 6.6.1 NCSP-R-WSI Schema Specification

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0"
targetNamespace="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0"
elementFormDefault="qualified">
  <xsd:annotation>
    <xsd:documentation>Defines two messages elements: HL7 - contains the HL7
      message sent from the client provider to NSU HL7fetch -
      contains the HL7 fetch method to poll for data sent from
      the client provider to NSU</xsd:documentation>
  </xsd:annotation>
  <xsd:element name="Message" type="xsd:string"/>
  <xsd:element name="Continues">
    <xsd:complexType/>
  </xsd:element>
  <xsd:element name="HL7">
    <xsd:annotation>
      <xsd:documentation>Contains HL7 message payload</xsd:documentation>
    </xsd:annotation>
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element ref="Message" maxOccurs="1"/>
        <xsd:element ref="Continues" minOccurs="0"/>
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
  <xsd:element name="HL7Error">
    <xsd:annotation>
      <xsd:documentation>Contains enumeration of error
      exceptions</xsd:documentation>
    </xsd:annotation>
    <xsd:simpleType>
      <xsd:restriction base="xsd:string">
        <xsd:enumeration value="ApplicationException"/>
        <xsd:enumeration value="MaximumSizeExceededException"/>
        <xsd:enumeration value="PollFrequencyException"/>
      </xsd:restriction>
    </xsd:simpleType>
  </xsd:element>
  <xsd:element name="HL7Fetch">
    <xsd:annotation>
      <xsd:documentation>Contains HL7 fetch message
      payload</xsd:documentation>
    </xsd:annotation>
    <xsd:complexType>
      <xsd:attribute name="maxResponseSize" type="xsd:long"/>
    </xsd:complexType>
  </xsd:element>
  <xsd:element name="HL7Received">
    <xsd:complexType/>
  </xsd:element>
</xsd:schema>
```

### 6.6.2 NCSP-R-WSI WSDL

```
<definitions targetNamespace="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0"
xmlns="http://schemas.xmlsoap.org/wsdl/"
xmlns:tns="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0"
xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:types="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0">
  <types>
    <xsd:schema xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/">
      <xsd:import namespace="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:1:0"
      schemaLocation="HL7WebServiceGatewayV1.0.xsd"/>
    </xsd:schema>
  </types>
```

```

    </xsd:schema>
  </types>
  <message name="HL7Message">
    <part name="HL7" element="types:HL7"/>
  </message>
  <message name="HL7ErrorMessage">
    <part name="HL7Error" element="types:HL7Error"/>
  </message>
  <message name="HL7FetchMessage">
    <part name="HL7Fetch" element="types:HL7Fetch"/>
  </message>
  <message name="HL7ReceivedMessage">
    <part name="HL7Received" element="types:HL7Received"/>
  </message>
  <portType name="HL7WebServiceGateway">
    <operation name="submitHL7">
      <input message="tns:HL7Message"/>
      <output message="tns:HL7ReceivedMessage"/>
      <fault message="tns:HL7ErrorMessage" name="Error"/>
    </operation>
    <operation name="fetchHL7">
      <input message="tns:HL7FetchMessage"/>
      <output message="tns:HL7Message"/>
      <fault message="tns:HL7ErrorMessage" name="Error"/>
    </operation>
  </portType>
  <binding name="HL7WebServiceGatewaySoapHttp"
    type="tns:HL7WebServiceGateway">
    <soap:binding style="document"
      transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="submitHL7">
      <soap:operation
        soapAction="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:HL7WebServiceGateway/submitHL7"/>
      <input>
        <soap:body use="literal" parts="HL7"/>
      </input>
      <output>
        <soap:body use="literal" parts="HL7Received"/>
      </output>
      <fault name="Error">
        <soap:fault use="literal" name="Error"/>
      </fault>
    </operation>
    <operation name="fetchHL7">
      <soap:operation
        soapAction="urn:nz:govt:moh:nsu:register:hl7:web:service:gateway:HL7WebServiceGateway/fetchHL7"/>
      <input>
        <soap:body use="literal" parts="HL7Fetch"/>
      </input>
      <output>
        <soap:body use="literal" parts="HL7"/>
      </output>
      <fault name="Error">
        <soap:fault use="literal" name="Error"/>
      </fault>
    </operation>
  </binding>
  <service name="HL7WebServiceGatewayV1_0">
    <port name="HL7WebServiceGatewaySoapHttpPort"
      binding="tns:HL7WebServiceGatewaySoapHttp">
      <soap:address location="tbd"/>
    </port>
  </service>
</definitions>

```

### 6.6.3 SOAP Sample Message

The following is a sample SOAP message illustrating the WS-Security headers required.

```

<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
  instance" xmlns:ns0="http://secure.cmaxwell.com/" xmlns:wsu="http://docs.oasis-
  open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <env:Header>
    <wsse:Security xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
    wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
    wssecurity-secext-1.0.xsd" xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
    env:mustUnderstand="1">
      <wsse:BinarySecurityToken xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-
      200401-wss-wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-
      200401-wss-wssecurity-secext-1.0.xsd" ValueType="http://docs.oasis-open.org/wss/2004/01/oasis-
      200401-wss-x509-token-profile-1.0#X509v3" EncodingType="http://docs.oasis-

```

```

open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0#Base64Binary"
wsu:Id="a1TWVwEd7BzjIqc3CyjpbXQ22" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-utility-
1.0.xsd">MIICDCCABUCBEYAU+MwDQYJKOZIhvcNAQEFBQAwTELMakGA1UEBhMCMVVMxEDAObGNVBAGTB0dlb3JnaWEExE
TAPBgNVBACTCGRhdmVib211MRAwDgYDVQQKEwdkYXZlT3JnMREwDwYDVQQLEWhkYXZlRGVmdDEUMBIGA1UEAxMLRGVfZ2S2ZS
QcmF0ZXIwHhcNMDE5MDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUw
TERMA8GA1UEBxMIWGF2ZUhhbWUxEDAObGNVBAAoTB2RhdmVPCmcxETAPBgNVBAsTCGRhdmVEZXBOMRQwEgYDVQDEwEYXZ
lIFByYXRlcjBNzANBgkqhkiG9w0BAQEFAAOBjQAwYkCgYEA3YaQkYze9iWNCWbqKz9wLDRq0dVtYmj4XrYjxvVDYhlm
mlbs6ZohUj5QTsQXFaPlhEH8X0o+2YGua0brpgz+fA+aFwMwmSilng3pDUMSO3PPy9tGbZ+wjOgOdY/d26vwzmfL38wgUc
ZorW0f03X9HBXWwZH96Wctz/WrP3B/ECawEAATANBgkqhkiG9w0BAQUFAAOBQBCKFCHROJoLgZf/16k3UTKuJ1rWc1sB
xUy/rLBOOMtUfoCoHm0A0IG5Fy9qFvRtl/AZbzI0YK1xc/lKwMsooXnyq2YTkOgU4kSRj4kyq8dTbQqj2SAhW6rDJ9ygQc
XpnQXiDM4IT5u/E4Jp83szcbmPq9qYQN/t1LXTZ7YqAm/pA==</wsse:BinarySecurityToken>
<xenc:EncryptedKey xmlns="http://www.w3.org/2001/04/xmlenc#"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#">
<xenc:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#rsa-1_5"/>
<dsig:KeyInfo xmlns:dsig="http://www.w3.org/2000/09/xmldsig#">
<wsse:SecurityTokenReference xmlns:wsse="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
<wsse:Reference xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd" URI="#a1TWVwEd7BzjIqc3CyjpbXQ22"
ValueType="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-x509-token-profile-
1.0#X509v3"/>
</wsse:SecurityTokenReference>
</dsig:KeyInfo>
<xenc:CipherData>
<xenc:CipherValue>09QgTv8sZ0gY7UkMqhJQzxs+Jqn15YBxsYPZHa6PuNAhkkI1ON362id16mYbdeV9x1URiV7JRWlu
4oTm+tJOyUM6EkEZq5J55eM1v89dkxywi+ZAgTung6ZhpDrWogL6VDu6PNjA3aLqSLcAazuOJR43Nrn1RsOKVksDb39yL
U=</xenc:CipherValue>
</xenc:CipherData>
<xenc:ReferenceList>
<xenc:DataReference URI="#_XIQwomishy3oxvc8CHNAuQ22"/>
</xenc:ReferenceList>
</xenc:EncryptedKey>
<wsse:BinarySecurityToken xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd" ValueType="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-x509-token-profile-1.0#X509v3" EncodingType="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0#Base64Binary"
wsu:Id="_8vDdpV6sArcdQ9STwJnLdw22" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-utility-
1.0.xsd">MIICQjCCAAsCBEYAU5YwDQYJKOZIhvcNAQEFBQAwADELMAkGA1UEBhMCMVVMxEDAObGNVBAGTB0Zsb3JpZGExE
DAOBgNVBACTB3NhbUhhbWUxZDZANBgNVBAoTBnNhbU9yZzEQMA4GA1UECjMhMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUw
gNVBAcTB3NhbUhhbWUxZDZANBgNVBAoTBnNhbU9yZzEQMA4GA1UECjMhMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUwMDE5MDUw
fMAOGCSqGSIb3DQEBAQUAA4GNADCBiQKBgQCD2r7DGETtND6I9vtGbigmZb5LWSINA5MIpMHPHZNw6B6d+OIW6ErL+hiKp
D65G1P5C6WklwD/EfJJIpxKc3beoRLSYMD9estS6u0I/30o907dATNsJ302Sx37CG1HIHp0+jJxMq05fHMD1sDG+Z6qEuP
UPeTSuegQJ7BFiZ0JdwIDAQABMA0GCSqGSIb3DQEBAQUAA4GBAFp7v1Q0j3FjFvEwRCDE0jbig/QihKkZt6SA7mIE8RZUN
t5+k2LvQhQhbc8ba35LkjbHoYwsQlGiZKeNxa1RuG2Yn6f/jNGalU/qSf3pY50QTXsdEqrUlndsU1XsHLWOLpaw0Hjm04p
T8XJvxZpCj053mru00/52gE4aRN8DjfnC</wsse:BinarySecurityToken>
<dsig:Signature xmlns="http://www.w3.org/2000/09/xmldsig#"
xmlns:dsig="http://www.w3.org/2000/09/xmldsig#">
<dsig:SignedInfo>
<dsig:CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-
c14n#"/>
<dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
<dsig:Reference URI="#P0m2cHk5IGiZUxQrUQmjzQ22">
<dsig:Transforms>
<dsig:Transform Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"/>
</dsig:Transforms>
<dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
<dsig:DigestValue>2LjJcPMHS3G1ZffX+Q1AycRRR93Y=</dsig:DigestValue>
</dsig:Reference>
</dsig:SignedInfo>
<dsig:SignatureValue>Kp0PFmlu7xGsb1CqN2qAZFG1jn7M2U6kEEJSOUFY6DJ5wBbiq+64HJjdMiaVDKl1thafvGy/v
Eblmi3vRkfmC35TlIo5TSSMFA TYWDP05swdEHdJqHZRawJ5OAE1ZSq3z9D6YS9zp0OHJkxfRy38fq/mD2hmwwT2FV6eh5C
TvMw=</dsig:SignatureValue>
<dsig:KeyInfo>
<wsse:SecurityTokenReference xmlns:wsse="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
<wsse:Reference xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd" URI="#_8vDdpV6sArcdQ9STwJnLdw22"
ValueType="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-x509-token-profile-
1.0#X509v3"/>
</wsse:SecurityTokenReference>
</dsig:KeyInfo>
</dsig:Signature>
<wsse:UsernameToken xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
wss-wssecurity-secext-1.0.xsd" xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
<wsse:Username>albert</wsse:Username>

```

```

    <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
username-token-profile-1.0#PasswordText">albert</wsse:Password>
    <wsse:Nonce>Scn5x6R7bK4Bv00REVji3A=</wsse:Nonce>
    <wsu:Created ValueType="http://www.w3.org/2001/XMLSchema/dateTime">2007-03-
23T02:56:00Z</wsu:Created>
    </wsse:UsernameToken>
    <wsu:Timestamp xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd" xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
    <wsu:Created>2007-03-23T02:56:00Z</wsu:Created>
    <wsu:Expires>2007-03-23T10:56:00Z</wsu:Expires>
    </wsu:Timestamp>
  </wsse:Security>
</env:Header>
<env:Body wsu:Id="P0m2cHk5IGiZUxQrUQmjzQ22" xmlns:wsu="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <xenc:EncryptedData xmlns="http://www.w3.org/2001/04/xmlenc#"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#" Type="http://www.w3.org/2001/04/xmlenc#Content"
Id="_XIQwomishy3oxvc8CHNAuQ22">
    <xenc:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#tripledes-cbc"/>
    <xenc:CipherData>
<xenc:CipherValue>mrvHUJw152aZedM9h1a05E+b1+/mgBpY3oqGf2OzewYDj8LZJfdd/0+zKqSI9TJkzJpqbTMstEwj
54tNX8buBJSbtRxGlxVav98BoDgU4gsCOJwfIPCeJNQJd/8ffYB9XZNeZH1nwPRVEbHE5COkaDrd2sBVKE3gsunQEEwTp
ugJ5PVaA8aEdRo1sUEJunPlabK+cf2yZvv5TyrN1b0bqObxRIyBEzL/OGMyYf1CoZwHVzOmGq964irivk/jX2IL2ANVMrM
IDV+bd3q5pBT8r4funuoJ2YaAQK5CkI0uWSSRdEhb/sqOv8oHB1kUK9DaFv0d7B95EPG7g0yWFDuMU0NCBTy0sF2/ZlmNq
zXg+W9NhrSfkmED2eg8OHquYiVgrhoCWqi0zwgS1bn9HuTCXtJ+z0DdauULQAI/bGJollxKtLWto7gztU4qn14y4Pht/7D
BgM04heOcox15qUOTesBMUM0IiEWNSo9IGzoZ2EA0i2eyGXx7Q==</xenc:CipherValue>
    </xenc:CipherData>
  </xenc:EncryptedData>
</env:Body>
</env:Envelope>

```

## 7 TRANSITIONAL FLAT FILE FORMATS

### 7.1 Transitional Status

For those providers who are unable to transact using HL7 messages the NCSP-R will continue to accept “flat files” as a transitional arrangement. However the current format will require considerable changes to match the new business requirements of the new Register

### 7.2 File names

File names of the submitted files must conform to the following format:

- CYT\_XXX\_YYY\_NNNNN for Cytology data
- HST\_XXX\_YYY\_NNNNN for Histology data
- HPV\_XXX\_YYY\_NNNNN for HPV test results

Where the prefix (CYTO, HISTO, HPV) identify the file type:

- XXX is the agency that assigned the lab identifier. I.e. HPI or NSU
- YYY is the identifier for the lab that sent the file e.g. HPI identifier, or NSU identifier
- NNNNN is a sequence number which is unique for that lab "00001", "00002" etc.

*Note: There will be sequential series for each file type I.e. there will be a file numbered 00001 for each of the file types. This enables the NCSP-R to detect missing files.*

### 7.3 File Layout for Cytology Files

The file is a fixed position file with the following layout (The M column states whether it is mandatory for a field to contain data). Note all fields are left justified and padded with spaces where required.

Field Name	Start Byte*	End Byte	Length	M	Comments
Woman's NHI number	1	7	7	N	Standard NHI format - 3 Alpha, 3 numeric plus check digit. See note 1 below.
Woman's Family Name	8	107	100	Y	Contains the woman's surname only. First names ARE NOT included here. See note 2 for valid characters
Woman's first given name	108	207	100	N	Contains woman's first name. See note 2 for valid characters
Woman's Second given name	208	307	100	N	Contains woman's second and subsequent name(s), space separated. See note 2 for valid characters. May contain initials only, however these will be treated as complete names.
Woman's preferred Name	308	407	100	N	Contains woman's preferred e.g. Elizabeth = Beth, See note 2 for valid characters
Date of birth (day)	408	409	2	Y	The next 3 fields make a valid date, and refer to the woman's date of birth. Valid day: This must be 01 to 31, but appropriate for month specified.
Date of birth (month)	410	411	2	Y	Valid month. 01 - 12.
Date of birth (year)	412	415	4	Y	Four digits of year. Values must be in century date format

Field Name	Start Byte*	End Byte	Length	M	Comments
Address_Line_1	416	515	100	N	Physical Address
Address_Line_2	516	615	100	N	Physical Address
Suburb	616	715	100	N	Physical Address
City_Town	716	815	100	N	Physical Address
Postcode	816	835	20	N	
Laboratory Test ID	836	855	20	Y	This field is mandatory and must be unique within a laboratory. See note 3 for valid values
CPN Domain	856	858	3	Y	This is to be used to identify the origin of the CPN. Allowed values are: NSU, HPI and HCM.
CPN (Common Person Number) of the smear taker	859	866	8	Y	The HPI format. - Alphanumeric (NNAAAA) e.g. "10AAAH". See Note 4 for more details For the NSU Smear Taker, any of the following formats: 3 blanks + 5 digits (medical smear takers); 1 blank + 1 capital letter + 6 numeric (Midwives); 2 capital letters + 6 numeric (non-medical smear takers - i.e. nurses and lay smear takers). See Note 4.1 for more details
HF Domain	867	869	3	Y	This is to be used to identify the origin of the Health Facility. Allowed values are: NSU and HPI.
Health facility identifiers where smear was taken	870	875	6	Y	A unique lifetime identifier for a facility assigned which takes precedence over all other identifiers HPI. - Alphanumeric FXXNNN See Note 4.2
Sample date (day)	876	877	2	Y	The next 3 fields make a valid date, and refer to the date the smear was taken. Valid day: This must be 01 to 31, but appropriate for month specified.
Sample date (month)	878	879	2	Y	Valid month. 01 - 12.
Sample date (year)	880	883	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Received at lab (day)	884	885	2	Y	The next 3 fields make a valid date, and refer to the date the smear was received at the laboratory. Valid day: This must be 01 to 31, but appropriate for month specified.
Received at lab (month)	886	887	2	Y	Valid month. 01 - 12.
Received at lab (year)	888	891	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Result reported (day)	892	893	2	Y	The next 3 fields make a valid date, and refer to the date the smear result was reported to the smear taker.

Field Name	Start Byte*	End Byte	Length	M	Comments
					Valid day: This must be 01 to 31, but appropriate for month specified.
Result reported (month)	894	895	2	Y	Valid month. 01 - 12.
Result reported (year)	896	899	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Last Modified (year)	900	903	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.  Where result data is changed and resent (such as when errors are identified after being sent to the NSU), this represents the timestamp when the result data was created or last changed. It is used to identify which version is the most correct. It should be unique for each version of a single result for a given woman.
Last Modified (month)	904	905	2	Y	Valid month. 01 - 12.
Last Modified (day)	906	907	2	Y	Valid day: This must be 01 to 31, but appropriate for month specified.
Last Modified (hour)	908	909	2	Y	Valid hour. 01 - 24
Last Modified (minute)	910	911	2	Y	Valid minute. 00 - 60
Last Modified (second)	912	913	2	Y	Valid second. 00 - 60
Specimen Type Code	914	916	3	Y	Valid specimen type code - see list in note 5.1 below.
LBC Product type	917	921	5	N	Valid LBC product type code - see list in note 5.2 below.
Site	922	922	1	Y	Valid Site code - see note 5.3 below.
Adequacy1	923	924	2	Y	Valid according to Bethesda specification
Adequacy2	925	926	2	N	Optional, but valid according to Bethesda specification if entered - space filled if not required
Category	927	928	2	N	Optional, but valid according to Bethesda specification if entered - space filled if not required
Recommendation	929	931	3	Y	Valid according to Bethesda specification
Diagnosis1	932	934	3	N	Optional, but valid according to Bethesda specification if entered - space filled if not required
Diagnosis2	935	937	3	N	Optional, but valid according to Bethesda specification if entered - space filled if not required

Field Name	Start Byte*	End Byte	Length	M	Comments
Diagnosis3	938	9408	3	N	Optional, but valid according to Bethesda specification if entered - space filled if not required
Diagnosis4	941	943	3	N	Optional, but valid according to Bethesda specification if entered - space filled if not required
Diagnosis5	944	946	3	N	Optional, but valid according to Bethesda specification if entered - space filled if not required
~	~	~	~	~	Note 6

**Table 55: Cytology File Layout**

\* assumes first byte is byte 1

Notes	Comments		
1	Valid characters for the NHI are: in Hex (30 - 39, 41 - 5A) {Numbers 0 to 9, Characters A to Z}.		
2	Valid characters for names are: in Hex (20, 2D, 27, 41 - 5A) {I.e. Space, Hyphen, Apostrophe, Characters A to Z}. Capitals only.		
3	Valid characters for smear Id are: in Hex (20 - 60, 7b - 7e) {I.e. Space, Numbers 0 to 9, Characters A to Z, includes any printable character}. Capitals only.		
4	Common Person Number (CPN): HPI system-generated two numeric (the second of which is a check digit) plus four alphabetic characters.		
4.1	Common Person Number (CPN) - NSU For the Smear Taker, any of the following formats: 3 blanks + 5 digits (medical smear takers); 1 blank + 1 capital letter + 6 numeric (Midwives); 2 capital letters + 6 numeric (non-medical smear takers - i.e. nurses and lay smear takers).		
4.2	Facility Identifier F is a constant prefix. X is either an alpha or a numeric. The Facility Identifier is assigned by the HPI system at the time that the facility record in the HPI is created.		
5.1	<b>Specimen Type Code</b>	<b>Descriptor</b>	<b>Code</b>
		Conventional pap smear	CPS
		Liquid Based Cytology	LBC
		Combined (conventional and liquid based)	COM
5.2	<b>LBC Product Type</b>	<b>Descriptor</b>	<b>Code</b>
		SurePath	SRPTH
		ThinPrep	THPRP
		Other	OTHER
5.3	<b>Site</b>	<b>Descriptor</b>	<b>Code</b>

Notes	Comments		
		Ectocervical	C
		Endocervical	N
		Routine Cervical smear	R
		Vaginal	V
		Vault	T
		Vulval	L
6	The structure is repeated for every record on the disk.		

**Table 56: Notes for Cytology File**

## 7.4 File Layout for Histology Files

The file is a fixed position file with the following layout. Note all fields are left justified and padded with spaces where required.

Field Name	Start Byte	End Byte	Length	M	Comments
Woman's NHI number	1	7	7	N	Standard NHI format - 3 Alpha, 3 numeric plus check digit. See note 1 below.
Woman's Family Name	8	107	100	Y	Contains the woman's surname only. First names ARE NOT included here. See note 2 for valid characters
Woman's first given name	108	207	100	N	Contains woman's first name. See note 2 for valid characters
Woman's Second given name	208	307	100	N	Contains woman's second and subsequent name(s), space separated. See note 2 for valid characters. May contain initials only, however these will be treated as complete names.
Woman's preferred Name	308	407	100	N	Contains woman's preferred e.g. Elizabeth = Beth, See note 2 for valid characters
Date of birth (day)	408	409	2	Y	The next 3 fields make a valid date, and refer to the woman's date of birth. Valid day: This must be 01 to 31, but appropriate for month specified.
Date of birth (month)	410	411	2	Y	Valid month. 01 - 12.
Date of birth (year)	412	415	4	Y	Four digits of year. Values must be in century date format
Address_Line_1	416	515	100	N	Physical Address
Address_Line_2	516	615	100	N	Physical Address
Suburb	616	715	100	N	Physical Address
City_Town	716	815	100	N	Physical Address
Postcode	816	835	20	N	
Laboratory Test ID	836	855	20	Y	This field is mandatory and must be unique

Field Name	Start Byte	End Byte	Length	M	Comments
					within a laboratory. See note 3 for valid values
CPN Domain	856	858	3	Y	This is to be used to identify the origin of the CPN. Allowed values are: NSU, HPI and HCM.
CPN (Common Person Number) of person taking specimen	859	866	8	Y	The HPI format. - Alphanumeric (NNAAAA) e.g. "10AAAH". See Note 4 for more details For the NSU Smear Taker, any of the following formats: 3 blanks + 5 digits (medical smear takers); 1 blank + 1 capital letter + 6 numeric (Midwives); 2 capital letters + 6 numeric (non-medical smear takers - i.e. nurses and lay smear takers).See Note 4.1 for more details
HF Domain	867	869	3	Y	This is to be used to identify the origin of the Health Facility. Allowed values are: NSU and HPI.
Health facility identifiers of facility where specimen taken	870	875	6	Y	A unique lifetime identifier for a facility assigned which takes precedence over all other identifiers HPI. - Alphanumeric FXXNNN See Note 4.2
Specimen date (day)	876	877	2	Y	The next 3 fields make a valid date, and refer to the date the smear was taken. Valid day: This must be 01 to 31, but appropriate for month specified.
Specimen date (month)	878	879	2	Y	Valid month. 01 - 12.
Specimen date (year)	880	883	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Received at lab (day)	884	885	2	Y	The next 3 fields make a valid date, and refer to the date the smear was received at the laboratory. Valid day: This must be 01 to 31, but appropriate for month specified.
Received at lab (month)	886	887	2	Y	Valid month. 01 - 12.
Received at lab (year)	888	891	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Result reported (day)	892	893	2	Y	The next 3 fields make a valid date, and refer to the date the smear result was reported to the smear taker. Valid day: This must be 01 to 31, but appropriate for month specified.
Result reported (month)	894	895	2	Y	Valid month. 01 - 12.

Field Name	Start Byte	End Byte	Length	M	Comments
Result reported (year)	896	899	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Last Modified (year)	900	903	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.  Where result data is changed and resent (such as when errors are identified after being sent to the NSU), this represents the timestamp when the result data was created or last changed. It is used to identify which version is the most correct. It should be unique for each version of a single result for a given woman.
Last Modified (month)	904	905	2	Y	Valid month. 01 - 12.
Last Modified (day)	906	907	2	Y	Valid day: This must be 01 to 31, but appropriate for month specified.
Last Modified (hour)	908	909	2	Y	Valid hour. 01 - 24
Last Modified (minute)	910	911	2	Y	Valid minute. 00 - 60
Last Modified (second)	912	913	2	Y	Valid second. 00 - 60
SNOMED Version	914	921	8	Y	Valid Values are either SNM-1986 (SNOMED 1986) or SNM-1993 (SNOMED 1993)
SNOMED code for Topography	922	927	6	Y	Valid values are T82000(vagina) or T83200 (cervix)
SNOMED code for Adequacy	928	933	6	N	Valid values are either M09010 (for inadequate specimen) or spaces
Type of Specimen	934	939	6	N	Procedure Code (SNOMED code) or Specimen Type (see Note 5).
SNOMED code for Diagnosis1	940	945	6	N	Valid values are either a diagnostic code or spaces (if adequacy code had a value of M09010)
SNOMED code for Diagnosis2	946	951	6	N	Valid values are either a diagnostic code or spaces At least 1 diagnosis or adequacy code must be entered Cannot have both diagnosis and adequacy codes
SNOMED code for Diagnosis3	952	957	6	N	Valid values are either a diagnostic code or spaces.
SNOMED code for Diagnosis4	958	963	6	N	Valid values are either a diagnostic code or spaces.
SNOMED code for Diagnosis5	964	969	6	N	Valid values are either a diagnostic code or spaces
~	~	~	~	~	Note 6

**Table 57: Histology File Layout**

Notes	Comments	
1	Valid characters for the NHI are: in Hex (30 - 39, 41 - 5A) {Numbers 0 to 9, Characters A to Z}.	
2	Valid characters for names are: in Hex (20, 2D, 27, 41 - 5A) {I.e. Space, Hyphen, Apostrophe, Characters A to Z}. Capitals only.	
3	Valid characters for lab test Id are: in Hex (20 - 60, 7b - 7e) {I.e. Space, Numbers 0 to 9, Characters A to Z, includes any printable character}. Capitals only.	
4	Common Person Number (CPN) – HPI HPI system-generated two numeric (the second of which is a check digit) plus four alphabetic characters	
4.1	Common Person Number (CPN) - NSU For the Smear Taker, any of the following formats: 3 blanks + 5 digits (medical smear takers); 1 blank + 1 capital letter + 6 numeric (Midwives); 2 capital letters + 6 numeric (non-medical smear takers - i.e. nurses and lay smear takers).	
4.2	Facility Identifier F is a constant prefix. X is either an alpha or a numeric. The Facility Identifier is assigned by the HPI system at the time that the facility record in the HPI is created.	
5	<b>Specimen Type Code Descriptor</b>	<b>Code</b>
	Hysterectomy	H or HYSTER
	Partial Hysterectomy with cervical component (note: "PARTIA" will be stored as "PARTIAL")	S or PARTIA
	Biopsy – Diagnostic	B or BIOPSY or D or DIAGNO
	Biopsy - Treatment e.g. LLETZ, Laser, Cone	T or TREATM
	Polyp	P or POLYP
6	The structure is repeated for every record on the disk.	

**Table 58: Notes for Histology File**

## 7.5 File Layout for HPV Test Result Files

The file is a fixed position file with the following layout. Note all fields are left justified and padded with spaces where required.

Field Name	Start Byte	End Byte	Length	M	Comments
Woman's NHI number	1	7	7	N	Standard NHI format - 3 Alpha, 3 numeric plus check digit. See note 1 below.
Woman's Family Name	8	107	100	Y	Contains the woman's surname only. First names ARE NOT included here. See note 2 for valid characters
Woman's first given name	108	207	100	N	Contains woman's first name. See note 2 for valid characters
Woman's Second	208	307	100	N	Contains woman's second and subsequent

Field Name	Start Byte	End Byte	Length	M	Comments
given name					name(s), space separated. See note 2 for valid characters. May contain initials only, however these will be treated as complete names.
Woman's preferred Name	308	407	100	N	Contains woman's preferred e.g. Elizabeth = Beth, See note 2 for valid characters
Date of birth (day)	408	409	2	Y	The next 3 fields make a valid date, and refer to the woman's date of birth. Valid day: This must be 01 to 31, but appropriate for month specified.
Date of birth (month)	410	411	2	Y	Valid month. 01 - 12.
Date of birth (year)	412	415	4	Y	Four digits of year. Values must be in century date format
Address_Line_1	416	515	100	N	Physical Address
Address_Line_2	516	615	100	N	Physical Address
Suburb	616	715	100	N	Physical Address
City_Town	716	815	100	N	Physical Address
Postcode	816	835	20	N	
Laboratory Test ID	836	855	20	Y	This field is mandatory and must be unique within a laboratory. See note 3 for valid values
CPN Domain	856	858	3	Y	This is to be used to identify the origin of the CPN. Allowed values are: NSU, HPI and HCM.
CPN (Common Person Number) of person taking specimen	859	866	8	Y	The HPI format. - Alphanumeric (NNAAAA) e.g. "10AAAAH". See Note 4 for more details For the NSU Smear Taker, any of the following formats: 3 blanks + 5 digits (medical smear takers); 1 blank + 1 capital letter + 6 numeric (Midwives); 2 capital letters + 6 numeric (non-medical smear takers - i.e. nurses and lay smear takers).See Note 4.1 for more details
HF Domain	867	869	3	Y	This is to be used to identify the origin of the Health Facility. Allowed values are: NSU and HPI.
Health facility identifiers	870	875	6	Y	A unique lifetime identifier for a facility assigned which takes precedence over all other identifiers HPI. - Alphanumeric FXXNNN See Note 4.2
Sample date (day)	876	877	2	Y	The next 3 fields make a valid date, and refer to the date the smear was taken. Valid day: This must be 01 to 31, but appropriate for month specified.
Sample date	878	879	2	Y	Valid month. 01 - 12.

Field Name	Start Byte	End Byte	Length	M	Comments
(month)					
Sample date (year)	880	883	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Received at lab (day)	884	885	2	Y	The next 3 fields make a valid date, and refer to the date the smear was received at the laboratory. Valid day: This must be 01 to 31, but appropriate for month specified.
Received at lab (month)	886	887	2	Y	Valid month. 01 - 12.
Received at lab (year)	888	891	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Result reported (day)	892	893	2	Y	The next 3 fields make a valid date, and refer to the date the smear result was reported to the smear taker. Valid day: This must be 01 to 31, but appropriate for month specified.
Result reported (month)	894	895	2	Y	Valid month. 01 - 12.
Result reported (year)	896	899	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.
Last Modified (year)	900	903	4	Y	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year. Where result data is changed and resent (such as when errors are identified after being sent to the NSU), this represents the timestamp when the result data was created or last changed. It is used to identify which version is the most correct. It should be unique for each version of a single result for a given woman.
Last Modified (month)	904	905	2	Y	Valid month. 01 - 12.
Last Modified (day)	906	907	2	Y	Valid day: This must be 01 to 31, but appropriate for month specified.
Last Modified (hour)	908	909	2	Y	Valid hour. 01 – 24
Last Modified (minute)	910	911	2	Y	Valid minute. 00 – 60
Last Modified (second)	912	913	2	Y	Valid second. 00 – 60
Specimen Type Code	914	916	3	Y	Valid technique code - see list in note 5.1 below.

Field Name	Start Byte	End Byte	Length	M	Comments
LBC Product type	917	921	5	N	Valid technique code - see list in note 5.2 below.
HPV Test Result	922	924	3	Y	See note 5.3 below.
HPV Commercial Product	925	929	5	Y	The code for the commercial product used for HPV testing. See note 5.4 below.
HPV Type 1	930	931	2	N	Optional, See note 6 below.
HPV Type 2	932	933	2	N	Optional, See note 6 below.
HPV Type 3	934	935	2	N	Optional, See note 6 below.
HPV Type 4	936	937	2	N	Optional, See note 6 below.
HPV Type 5	938	939	2	N	Optional, See note 6 below.
HPV Type 6	940	941	2	N	Optional, See note 6 below.
HPV Type 7	942	943	2	N	Optional, See note 6 below.
HPV Type 8	944	945	2	N	Optional, See note 6 below.
HPV Type 9	946	947	2	N	Optional, See note 6 below.
HPV Type 10	948	949	2	N	Optional, See note 6 below.
HPV Type 11	950	951	2	N	Optional, See note 6 below.
HPV Type 12	952	953	2	N	Optional, See note 6 below.
HPV Type 13	954	955	2	N	Optional, See note 6 below.
~	~	~	~	~	Note 6

**Table 59: HPV Test Result File Layout**

Notes	Comments		
1	Valid characters for the NHI are in Hex (30 - 39, 41 - 5A) {Numbers 0 to 9, Characters A to Z}.		
2	Valid characters for names are in Hex (20, 2D, 27, 41 - 5A) {l.e. Space, Hyphen, Apostrophe, Characters A to Z}. Capitals only.		
3	Valid characters for smear Id are in Hex (20 - 60, 7b - 7e) {l.e. Space, Numbers 0 to 9, Characters A to Z, includes any printable character}. Capitals only.		
4	Common Person Number (CPN) HPI system-generated two numeric (the second of which is a check digit) plus four alphabetic characters.		
4.1	Common Person Number (CPN) - NSU For the Smear Taker, any of the following formats: 3 blanks + 5 digits (medical smear takers); 1 blank + 1 capital letter + 6 numeric (Midwives); 2 capital letters + 6 numeric (non-medical smear takers - i.e. nurses and lay smear takers).		
4.2	Facility Identifier F is a constant prefix. X is either an alpha or a numeric. The Facility Identifier is assigned by the HPI system at the time that the facility record in the HPI is created.		
5.1	<b>Specimen Type</b>	<b>Descriptor</b>	<b>Code</b>
		Liquid Based Cytology	LBC
		Combined ( conventional and liquid based)	COM

		Swab	SWB
		Other	OTH
5.2	<b>LBC Product Type</b>	<b>Descriptor</b>	<b>Code</b>
		SurePath	SRPTH
		ThinPrep	THPRP
		Other	OTHER
5.3	<b>HPV Test Result</b>	<b>Descriptor</b>	<b>Code</b>
		NOT DETECTED	ND
		DETECTED	D
		INVALID	INV
5.4	<b>HPV Commercial Product</b>	<b>Descriptor</b>	<b>Code</b>
		Digene HC2	DGHC2
		Amplicor HPV PCR	AMPCR
		Other	OTHER
6	Use valid HPV sub types from Table 47 - 99NZHPVST.		
7	The structure is repeated for every record on the disk.		

**Table 60: Notes for HPV Test Result File**

## 8 FLAT FILE FORMAT CHANGES

### 8.1 Background

This section details the differences between the original flat file formats and those detailed in Section 7

### 8.2 File Layout changes for Cytology Files

The file is a fixed position file with the following layout. Note all fields are left justified and padded with spaces where required.

Field Name	Start Byte	End Byte	Length	Comments	Changes
Woman's NHI number	1	7	7	Standard NHI format - 3 Alpha, 3 numeric plus check digit.	
Woman's Family Name	8	107	100	Contains the woman's surname only. First names ARE NOT included here	Increased length
Woman's first given name	108	207	100	Contains woman's first name	New start position, increased length, doesn't include second or subsequent names
Woman's Second given name	208	307	100	Contains woman's second and subsequent name(s), space separated.	New
Woman's preferred Name	308	407	100	Contains woman's preferred e.g. Elizabeth = Beth,	New
Date of birth (day)	408	409	2	The next 3 fields make a valid date, and refer to the woman's date of birth.	New start position
				Valid day: This must be 01 to 31, but appropriate for month specified.	
Date of birth (month)	410	411	2	Valid month. 01 - 12.	New start position
Date of birth (year)	412	415	4	Four digits of year. Values must be in century date format	New start position

Field Name	Start Byte	End Byte	Length	Comments	Changes
Address_Line_1	416	515	100	Physical Address	New item
Address_Line_2	516	615	100	Physical Address	New item
Suburb	616	715	100	Physical Address	New item
City_Town	716	815	100	Physical Address	New item
Postcode	816	835	20		New
Laboratory Test ID	836	855	20	This field is mandatory and must be unique within a laboratory	Name changed form Smear ID Field size increased
CPN Domain	856	858	3	This is to be used to identify the origin of the CPN i.e. NSU or HPI	New
CPN (Common Person Number) of the smear taker	859	866	8	The HPI format. - Alphanumeric (NNAAAA) e.g. "10AAAH For the NSU Smear Taker, any of the following formats: 3 blanks + 5 digits (medical smear takers); 1 blank + 1 capital letter + 6 numeric (Midwives); 2 capital letters + 6 numeric (non-medical smear takers - i.e. nurses and lay smear takers).See Note 4.1 for more details	Changed from Smear Taker to CPN, Increase in length
HF Domain	867	869	3	This is to be used to identify the origin of the CPN i.e. NSU or HPI	New
Health facility identifiers where smear was taken	870	875	6	A unique lifetime identifier for a facility assigned which takes precedence over all other identifiers HPI. - Alphanumeric FXXNNN See Note 4.2	New
Sample date (day)	876	877	2	The next 3 fields make a valid date, and refer to the date the smear was taken.	Field name change from Smear to sample, New start position
				Valid day: This must be 01 to 31, but	

Field Name	Start Byte	End Byte	Length	Comments	Changes
				appropriate for month specified.	
Sample date (month)	878	879	2	Valid month. 01 - 12.	Field name change from Smear to sample, New start position
Sample date (year)	880	883	4	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.	Field name change from Smear to sample, New start position
Received at lab (day)	884	885	2	The next 3 fields make a valid date, and refer to the date the smear was received at the laboratory.	New start position
				Valid day: This must be 01 to 31, but appropriate for month specified.	
Received at lab (month)	886	887	2	Valid month. 01 - 12.	New start position
Received at lab (year)	888	891	4	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.	New start position
Result reported (day)	892	893	2	The next 3 fields make a valid date, and refer to the date the smear result was reported to the smear taker.	New start position
				Valid day: This must be 01 to 31, but appropriate for month specified.	
Result reported (month)	894	895	2	Valid month. 01 - 12.	New start position
Result reported (year)	896	899	4	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.	New start position
Last Modified (year)	900	903	4	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.	New

Field Name	Start Byte	End Byte	Length	Comments	Changes
Last Modified (month)	904	905	2	Valid month. 01 - 12.	New
Last Modified (day)	906	907	2	Valid day: This must be 01 to 31, but appropriate for month specified.	New
Last Modified (hour)	908	909	2	Valid hour. 01 - 24	New
Last Modified (minute)	910	911	2	Valid minute. 00 - 60	New
Last Modified (second)	912	913	2	Valid second. 00 - 60	New
Specimen Type code	914	916	3	Valid technique	Name changed from Technique. Increased in size from 1 to 3. Accepted code values changed.
LBC Product type	917	921	5	Valid technique	New field
Site	922	922	1	Valid Site code	New start position
Adequacy1	923	924	2	Valid according to Bethesda specification	New start position, field size changed
Adequacy2	925	926	2	Optional, but valid according to Bethesda specification if entered - space filled if not required	New start position, field size changed
Category	927	928	2	Optional, but valid according to Bethesda specification if entered - space filled if not required	New start position, field size changed
Recommendation	929	931	3	Valid according to Bethesda specification	New start position, field size changed
Diagnosis1	932	934	3	Optional, but valid according to Bethesda specification if entered - space filled if not required	New start position, field size changed
Diagnosis2	935	937	3	Optional, but valid according to Bethesda specification if entered - space filled if not	New start position, field size changed

Field Name	Start Byte	End Byte	Length	Comments	Changes
				required	
Diagnosis3	938	9408	3	Optional, but valid according to Bethesda specification if entered - space filled if not required	New start position, field size changed
Diagnosis4	941	943	3	Optional, but valid according to Bethesda specification if entered - space filled if not required	New start position, field size changed
Diagnosis5	944	946	3	Optional, but valid according to Bethesda specification if entered - space filled if not required	New start position, field size changed

**Table 61: Cytology File Layout**

### 8.3 File Layout changes for Histology Files

The file is a fixed position file with the following layout. Note all fields are left justified and padded with spaces where required.

Field Name	Start Byte	End Byte	Length	Comments	Changes
Woman's NHI number	1	7	7	Standard NHI format - 3 Alpha, 3 numeric plus check digit.	
Woman's Family Name	8	107	100	Contains the woman's surname only. First names ARE NOT included here.	Increased length
Woman's first given name	108	207	100	Contains woman's first name	New start position, increased length, doesn't include second or subsequent names
Woman's Second given name	208	307	100	Contains woman's second and subsequent name(s), space separated.	New
Woman's preferred Name	308	407	100	Contains woman's preferred e.g. Elizabeth = Beth,	New
Date of birth (day)	408	409	2	The next 3 fields make a valid date, and refer to the woman's date of birth.	New start position
				Valid day: This must be 01 to 31, but appropriate for month specified.	
Date of birth (month)	410	411	2	Valid month. 01 - 12.	New start position
Date of birth (year)	412	415	4	Four digits of year. Values must be in century date format	New start position
Address_Line_1	416	515	100	Physical Address	New item
Address_Line_2	516	615	100	Physical Address	New item
Suburb	616	715	100	Physical Address	New item
City_Town	716	815	100	Physical Address	New item

Field Name	Start Byte	End Byte	Length	Comments	Changes
Postcode	816	835	20		New
Laboratory Test ID	836	855	20	This field is mandatory and must be unique within a laboratory	Name changed from Smear ID Field size increase
CPN Domain	856	858	3	This is to be used to identify the origin of the CPN i.e. NSU or HPI	New
CPN (Common Person Number) of person taking specimen	859	866	8	The HPI format. - Alphanumeric (NNAAAA) e.g. "10AAAH". For the NSU Smear Taker, any of the following formats: 3 blanks + 5 digits (medical smear takers); 1 blank + 1 capital letter + 6 numeric (Midwives); 2 capital letters + 6 numeric (non-medical smear takers - i.e. nurses and lay smear takers).	Changed from Smear Taker to CPN, Increase in length
HF Domain	867	869	3	This is to be used to identify the origin of the CPN i.e. NSU or HPI	New
Health facility identifiers of facility where specimen taken	870	875	6	A unique lifetime identifier for a facility assigned which takes precedence over all other identifiers HPI. - Alphanumeric FXXNNN See Note 4.1	New
Specimen date (day)	876	877	2	The next 3 fields make a valid date, and refer to the date the smear was taken.	New start position
				Valid day: This must be 01 to 31, but appropriate for month specified.	
Specimen date (month)	878	879	2	Valid month. 01 - 12.	New start position
Specimen date (year)	880	883	4	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.	New start position

Field Name	Start Byte	End Byte	Length	Comments	Changes
Received at lab (day)	884	885	2	The next 3 fields make a valid date, and refer to the date the smear was received at the laboratory.	New start position
				Valid day: This must be 01 to 31, but appropriate for month specified.	
Received at lab (month)	886	887	2	Valid month. 01 - 12.	New start position
Received at lab (year)	888	891	4	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.	New start position
Result reported (day)	892	893	2	The next 3 fields make a valid date, and refer to the date the smear result was reported to the smear taker.	New start position
				Valid day: This must be 01 to 31, but appropriate for month specified.	
Result reported (month)	894	895	2	Valid month. 01 - 12.	New start position
Result reported (year)	896	899	4	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.	New start position
Last Modified (year)	900	903	4	Four digits of year. Values must be in century date format. Anticipated value between 1989 and current year.	New
Last Modified (month)	904	905	2	Valid month. 01 - 12.	New
Last Modified (day)	906	907	2	Valid day: This must be 01 to 31, but appropriate for month specified.	New
Last Modified (hour)	908	909	2	Valid hour. 01 - 24	New
Last Modified (minute)	910	911	2	Valid minute. 00 - 60	New

Field Name	Start Byte	End Byte	Length	Comments	Changes
Last Modified (second)	912	913	2	Valid second. 00 - 60	New
SNOMED Version	914	921	8	Valid Values are either SNM-1986 ( SNOMED 1986) or SNM-1993 (SNOMED 1993)	New field
SNOMED code for Topography	922	927	6	Valid values are T82000(vagina) or T83200 (cervix)	New start position
SNOMED code for Adequacy	928	933	6	Valid values are either M09010 (for inadequate specimen) or spaces	New start position
'Type of Specimen	934	939	6		New field
SNOMED code for Diagnosis1	940	945	6	Valid values are either a diagnostic code or spaces ( if adequacy code had a value of M09010)	New start position, field size changed, no longer takes 'Type of Specimen'
SNOMED code for Diagnosis2	946	951	6	Valid values are either a diagnostic code or spaces At least 1 diagnosis or adequacy code must be entered Cannot have both diagnosis and adequacy codes	New start position, field size changed, no longer takes 'Type of Specimen'
SNOMED code for Diagnosis3	952	957	6	Valid values are either a diagnostic code or spaces.	New start position, field size changed, no longer takes 'Type of Specimen'
SNOMED code for Diagnosis4	958	963	6	Valid values are either a diagnostic code or spaces.	New start position, field size changed, no longer takes 'Type of Specimen'
SNOMED code for Diagnosis5	964	969	6	Valid values are either a diagnostic code or spaces	New start position, field size changed, no longer takes 'Type of Specimen'

**Table 62: Histology File Layout**

