A Specification for Structured Messaging for Shared Antenatal Care

Document History	
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Version	Reviewers
0.1	Drs Ray Mulready, Frank Hill, Donal Buckley, John Murphy, Conor O'Shea, Mary Favier; Prof Richard Greene,
0.3	Ms Gemma Garvan, Ms Karen Wynne,
0.4	Prof Richard Greene

Table 1 Document Review

Document History

Authors	Date	Version	Changes
Brian O'Mahony	17/10/2016	0.1	First draft
Brian O'Mahony	24/10/2016	0.2	Addition of section of implementation in GP software systems, tidying up of XML fragments,
Brian O'Mahony	16/11/2016	0.3	Addition of LOINC codes for observations, addition of code tables, information on acknowledgement messages added,
Brian O'Mahony	24/01/2017	0.4	Added SNOMED CT codes to Table 3 and updated XML fragment for Observation Segments to include SNOMED CT codes
Brian O'Mahony	27/01/2017	0.5	Added optionality details to Table 3 and changed data items in Table 3, added information for GP software vendors in Section 7
Brian O'Mahony	22/02/2017	0.6	Provided SNOMED CT codes for OBR segments, added medication fields, changes to Section 7 for GP software vendors
Thomas O'Dwyer, Karen Wynne, Andrew Czartoryski,	12/04/2017	0.7	Correction of format of IHI number, changes to allowed values for: uterine contractions, foetal heart, foetal movement, agreed EDD method, foetal presentation, note on urinalysis field,
Thomas O'Dwyer, Frank Hill	08/05/2017	0.8	Changes to Oedema field in Table 3, new notes on allowed values for Proteinuria and Glycosuria, example of Urinalysis result from MN-CMS included, XML fragments updated for clinical observations
Brendan O'Connor, Brian O'Mahony, Carl Beame	25/05/2017	0.9	Addition of datatypes to Table 3, Message Type ID Table 13 filled, correction of CUMH identifier in MSH.6, change to how antenatal messages are triggered in GP practice, addition of PV1.2 field, clarification of glycosuria scale,
Karen Wynne	06/06/2017	0.10	Changes to allowed values for Foetal presentation in Table 3, addition of note on multiple pregnancies, clarification on the ACK process (Section 13), addition of Section 12 on corrections,
Brian O'Mahony	18/07/2017	0.11	Optionality changes in Table 3: Body weight and Clinical note are now optional fields,
Brian O'Mahony	10/08/2017	0.12	Change of name of 'Foetal movement'

			field to ‘Foetal activity’ and change in allowed values as shown in Table 3,
Brian O'Mahony	31/08/2017	0.13	Last Menstrual Period (LMP) field changed to optional in Table 3
Brian O'Mahony	01/09/2017	0.14	Error corrected in Table 3: LMP is optional, but EDD is required.
Brendan O’Connor	04/09/2017	0.15	Typo corrected in glycosuria list on page 5: should be 1+ (250 mg/dl), change in the datatype of ‘Date of next visit at this setting’ to numeric with the unit being ‘week’,
Brian O'Mahony	28/09/2017	0.16	PV1.9 Field added for Private Rooms (Page 13), note on Medication fields
Karen Wynne	05/10/2017	0.17	Add Healthlink branding
Karen Wynne	10/11/2020	0.18	Updated Notes on Medication to include format of med details received from GPs

Table 2 Document History

Contents

1. Background

The first implementation of the Maternity and Newborn Clinical Management System (MN-CMS) in Cork University Maternity Hospital has highlighted the need for general practitioners and hospital maternity services to exchange information on antenatal visits in structured electronic format via Healthlink, the National messaging broker. This document defines the structure, format and meaning of the data to be exchanged. Messages are in Health Level Seven (HL7) version 2.4 format with Extensible Markup Language (XML) encoding, in conformance with the Health Information and Quality Authority (HIQA) GP Messaging Standard.

2. Scope

The scope of this specification is clinical information exchange during shared ante natal care. It does not include obstetric eReferral, booking clinic information at the hospital, discharge summary information from the hospital or the post-natal 6 week check of mother and baby by the GP. The scope does not include exchanging laboratory test results between GPs and hospital staff.

3. Clinical Information at Antenatal Visit

A mixture of structured and unstructured information is captured at the antenatal visit. This can take place at the hospital or at the GP practice. The information may be captured by a doctor or a midwife. Here is a list of clinical observations that are relevant to an antenatal visit.

Name	**SNOMED CT Code**	**LOINC Code**	**Optionality**	**Note**
Last Menstrual Period (LMP)	21840007	8665-2	Optional	Date, captured from booking
Agreed/Final Expected Date of Delivery (EDD)	161714006	11778-8	Required	Date, initial EDD is based on LMP, it becomes final once agreed with US scan
Agreed EDD Method	246366009	Local code	Required	Allowed Values: Advanced Reproductive Technology, Last Menstrual Period, Ultrasound and Unknown
Gravida	161732006	11996-6	Required	Numeric, captured from booking
Parity	364325004	11977-6	Required	Numeric, captured from booking
Fundal height	249016007	11881-0	Optional	Numeric, in cm
Body weight	27113001	3141-9	Optional	Numeric, in kg
Body Mass Index (BMI)	60621009	39156-5	Optional	Numeric, in kg/m2
Systolic blood pressure	271649006	8480-6	Required	Numeric, in mmHg
Diastolic blood pressure	271650006	8462-4	Required	Numeric in mmHg

Oedema	423666004	44966-0	Optional	Text e.g. Oedema, Localised 2+ (4mm) Pitting
Proteinuria	29738008	20454-5	Optional	Text, see notes below for allowed values
Urinalysis	27171005	24357-6	Optional	Text, restrict to results for Blood (if +ve), Glucose (if +ve or –ve), Ketones (if +ve), Leukocytes (if +ve) and Nitrites (if +ve)
Haemoglobin	38082009	718-7	Optional	Numeric in g/dl
Foetal activity	32279003	57088-7	Optional	Allowed values: Present per palpation, Present per patient, Decreased per patient, Absent per palpation, Absent per patient,
Foetal heart	249042007	11615-2	Optional	Allowed values: Present, Absent
Number of foetuses	246435002	55281-0	Optional	Numeric
Uterine contractions	289699001	56866-7	Optional	Allowed values: Yes, No
Foetal presentation	271692001	11876-0	Optional	Allowed values: Cephalic, Breech, Non-cephalic/Non-breech,
Foetal engagement	47219002	Local code	Optional	Allowed values: (1/5, 2/5, 3/5, 4/5, 5/5)
Medication details	182833002		Optional	List of current medications
Clinical note	169616000	34778-1	Optional	Text, to include assessment, concerns and management plan
Date of next visit at this setting	390840006	57070-5	Optional	Numeric, with the unit being ‘week’, if review is required within days then this should be entered in the clinical note

Table 1 Information captured at antenatal visit

Notes on Oedema

- The contents of the Oedema field from MN-CMS will be a text string defining whether the oedema is absent, generalised or localised and the extent of the oedema. For example: ‘Oedema, Bilateral Pedal 4+ (8mm) Pitting ; Oedema, Left Ankle Non-Pitting ; Oedema, Right Ankle 2+ (4mm) Pitting’.

Notes on Urinalysis and Proteinuria

- The possible values for Proteinuria are:
    - Negative
      Trace
      1+ (30 mg/dl)
      2+ (100 mg/dl)
      3+ (300 mg/dl)
      4+ (greater than 2000 mg/dl)

- Urinalysis will be restricted to five tests only: Blood, Glucose, Ketones, Leukocytes and Nitrites. The Glucose result will issue at all times, whether it is +ve or –ve. The other four tests will only be resulted if they are positive.
- Here is an example of a Urinalysis result: 'Ketones Urine Dipstick:3+,Blood Urine Dipstick:Large,Glucose Urine Dipstick:2+ (500 mg/dl),Leukocytes Urine Dipstick:Large,Nitrites Urine Dipstick:Positive,'.
- The possible values for Glucose, within the Urinalysis text string are:
    - Negative
      Trace (100 mg/dl)
      1+ (250 mg/dl)
      2+ (500 mg/dl)
      3+ (1000 mg/dl)
      4+ (2000) Or greater than mg/dl

Notes on Multiple Pregnancies

In the case of multiple pregnancies, the 'Number of Foetuses' field will be greater than one and three fields will have repeated values. These fields are 'Foetal presentation', 'Foetal heart' and 'Foetal movement'. For example, in the case of triplets these fields could contain the following data:

- Foetal movement: 'Baby A:Present, Baby B:Decreased, Baby C:Present'
- Foetal heart: 'Baby A:Present, Baby B:Decreased, Baby C:Absent'
- Foetal presentation: 'Baby A:Breech, Baby B:Transverse, Baby C:Transverse'

Notes on Medication

At initial go live for this service the outgoing message from MNCMS to GP will not include a Medication field with information on the woman's current medication. Maternity hospital staff should include relevant medication information in the Clinical Note field.

Incoming messages from GPs to the Maternity Hospital will include the Medication field if there are current medications. If no current medications are listed in the GP system, the Medication field will be omitted in the antenatal message.

Current medications are defined as any medication prescribed by the GP to the patient in the previous 12 months.

Medication details should include the following information in chronological order:

1. Date of issue
2. Drug name
3. Generic name

4. Strength dose/Volume dose
5. Strength dose unit/Volume dose unit
6. Route
7. Drug Form
8. Frequency/Instructions/Directions
9. Quantity
10. Number of repeats

For example:

- 03/11/2020 Seroxat Paroxetine 30mg oral film coated tablet – One to be taken daily, 28, repeat x 5
- 03/11/2020 Augmentin Co-amoxiclav 500mg/125mg oral tablet – One to be taken three times daily, 21, No repeat
- 20/10/2020 Gyno-Pevaryl Econazole nitrate 150 mg Vaginal Pessary - One pessary to be inserted deep into the vagina ONCE only, 1, No repeats
- 10/10/2020 Neo-cytamen 1000 micrograms/ml Hydroxocobalamin 1000micrograms/ml intramuscular injection 1mg 3 times a week for 2 weeks then 1mg every 2-3 months, 5, Repeat x 1, 1mg administered
- 01/10/2020 Quadrivalent Influenza Vaccine (split virion, inactivated) suspension for injection 0.5ml pre-filled syringes – 0.5ml intramuscular injection once ONLY, 1, No repeats, 0.5ml administered

4. Implementation in GP Practice Software Systems

The idea behind the limited set of information being shared is that it consists of observations that change dynamically as the pregnancy proceeds and thus need to be made available to GPs and Hospital staff. It is thus a subset of information and there is nothing to stop a GP software vendor from displaying a whole load of other information in the Maternity module. Some of this 'other information' would include:

- Blood Group and Rhesus status
- Rubella susceptibility
- Hepatitis B screening test
- Immunisation status (Influenza and Pertussis)
- Breast feeding intentions
- Social history
- Smoking and alcohol use
- Gestational diabetes

But this 'other information' won't change in the dynamic fashion that blood pressure or fundal height changes.

Contact and routing information are also important, such as the pregnant woman's health identifier, the Obstetrician or Midwifery service identifiers and the maternity hospital involved in the shared care.

It is important that the shared antenatal care data being exchanged is integrated and displays in the GP maternity module in a clear and user friendly manner. This is especially critical for the 'Clinical note' information which is likely to contain important information on

assessment, concerns and management plans. The most recent Haemoglobin result available should be extracted from a Full Blood Count and displayed. The gestation should be derived from the Agreed/Final Expected Date of Delivery (EDD).

Incoming shared antenatal care data should be fully integrated into the GP practice software system, so that BP, weight and other fields can be tracked, analysed and made available in flowcharts.

It is important to avoid sending multiple incomplete antenatal care messages, for the same visit, to the maternity hospital. Within the GP system, the antenatal shared care message to the hospital should be triggered manually when the GP or practice nurse completes and closes out of the antenatal care visit form. A transient notification or message should appear to indicate to the clinician that a message has gone off to the Maternity hospital.

An overview of antenatal messages sent and received and acknowledgement messages sent and received is needed for each patient. Received antenatal messages should be integrated into the maternity module for the individual patient and should also be available for review and sign off by the responsible clinician.

5. Technical Format

In the HL7 version 2.4 messaging standard, an unsolicited observation messague (ORU_R01) is used to transmit clinical information generated at an antenatal visit. This is the same message type used for a laboratory test result or a radiology report. GP Practice Software Management Systems are familiar with how to integrate and display this message type. The message is triggered at either the hospital or GP end when an episode of antenatal care is completed. The message can be triggered by a GP, an obstetrician or a midwife.

The structure of an antenatal visit message (ORU_R01) message is as follows:

Message Header Segment (MSH), message routing information;
Patient Identification Segment (PID), patient information;
Patient Visit Segment (PV1), site of antenatal care;
Observation Report Segment (OBR), antenatal visit;
Observation Result Segment (OBX), a series of clinical observations;

6. Message Flow

At each antenatal visit, whether in the maternity hospital, a community clinic or a GP practice, a message is created and sent as an ORU_R01 message. An acknowledgement message (ACK) is returned from the receiving agency.

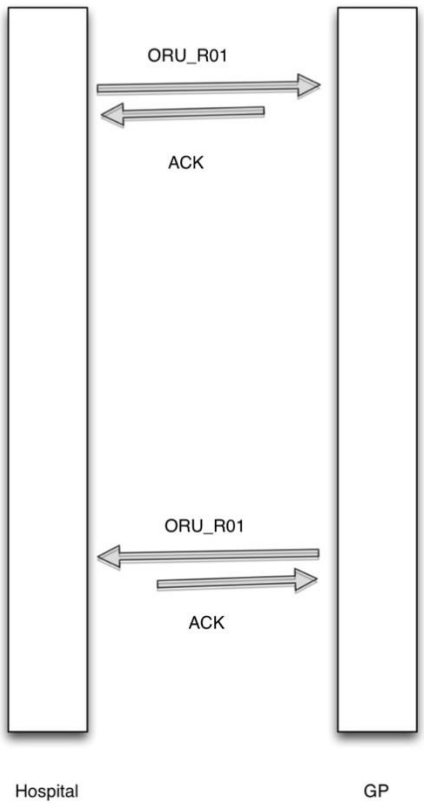

Figure 1 Message flow between maternity clinical information system and GP practice software system for shared antenatal care

7. Message Types

An unsolicited Observation Message (ORU_R01) is generated at each antenatal visit and exchanged with the maternity information system or GP software system via Healthlink. The receiving agency will return an Acknowledgement Message (ACK_R01) for each antenatal assessment (ORU_R01) received.

ORU^R01	**Unsolicited Observation Message**	**Chapter**
MSH	Message Header	2
{		
[		
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NK1}]	Next of Kin/Associated Parties	3
[{NTE}]	Notes and Comments	2
[		
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info	3
]		
]		
{		
[ORC]	Order common	4
OBR	Observations Report ID	7
{[NTE]}	Notes and comments	2
[CTD]	Contact Data	11
{		
[OBX]	Observation/Result	7
{[NTE]}	Notes and comments	2
}		
[{FT1}]	Financial Transaction	6
{[CTI]}	Clinical Trial Identification	7
}		
}		
[DSC]	Continuation Pointer	2

Table 2 Abstract Message Structure for Unsolicited Observation Message

These are the segments used in this implementation:

ORU_R01	**Observation Message**	**HL7 Chapter**
MSH	Message Header	2
PID	Patient Identification	3
PV1	Patient Visit	3
OBR	Observation Request	4
OBX	Observation/Result	7

Table 3 Segments in use in this implementation

Message Header Segment (MSH)

This table shows the fields when the clinical information is generated at the GP practice and sent to the maternity hospital.

Field	**Mand**	**Value**	**Comment**	**HL7**
Sending Application	Yes	HELIXPM.HEALTHLINK.XX	Made up of name of GP Practice Software System, Healthlink and Healthlink Message Type	<MSH.3>
Sending Facility	Yes		GP's Medical Council Number	<MSH.4>
Receiving Application	Yes		MN-CMS, the clinical information system	<MSH.5>
Receiving Facility	Yes		Maternity Hospital attended	<MSH.6>
Date/time of message	Yes	YYYYMMDDHHMM		<MSH.7>
Message Type	Yes	ORU_R01 (Constant)		<MSH.9>
Message Control ID	Yes	ORU2015082716205405003564	Uniquely identifies the message. The format used to generate the Message Control ID is "ORU" + date and time in the format YYYYMMDDHHMMSSS + GP's 6 digit Medical Council Number. Note the max length of this field is 50 characters.	<MSH.10>
Processing ID	Yes	P (Constant)		<MSH.11>
Version ID	Yes	2.4 (Constant)	HL7 version number	<MSH.12>
Accept ACK Type	Yes	AL (Constant)	ACK always expected	<MSH.15>

Table 4 Message Header Segment MSH

Patient Identification Segment (PID)

Field	Mand	Value	Comment	HL7
Patient Identifier	Yes		The patient identifier could be the Individual Health Identifier (IHI) or a maternity hospital identifier or both.	<PID.3>
Patient Name	Yes	Varchar(50)	Surname, first name	<PID.5>
Date of Birth	Yes	YYYYMMDD	Min: 19000101 Max: current date	<PID.7>
Gender	Yes	F, M	F for female, M for male	<PID.8>
Address	Yes	Four lines, each line Varchar(30)	Four lines, first two are mandatory	<PID.11>

Table 5 Patient Identification Segment PID

Patient Visit Segment (PV1)

Field	Mand	Value	Comment	HL7
Patient Class	Yes	O for Outpatient	Required HL7 field, uses HL7 user defined Table 0004	<PV1.2>
Attending doctor	Yes	Identifies GP's Medical Council number	This indicates the patient's registered GP. Individual Health Professional Identifier (IHPI) as a repeating field, which will also be mandatory when it becomes available.	<PV1.7>

Table 6 Patient Visit Segment PV1

Observation Request Segment (OBR)

Field	Mand	Value	Comment	HL7
Set ID	Yes	Numeric	Value 1	<OBR.1>
Universal Service Identifier	Yes	LOINC code and name for observation request	Different codes for GP, community or hospital initiated ante natal visit	<OBR.4>
Observation time	Yes	YYYYMMDD	Date of the consultation	<OBR.7>

Table 7 Observation Request Segment OBR

Observation Result Segment (OBX)

Field	Mand	Value	Comment	HL7
Set ID	Yes	Numeric	Starts at 1 and incrementally increases,	<OBX.1>

			order is not significant	
Value type	Yes	FT, NM, CE, TS,	FT for formatted text, NM for numeric, CE for coded entry, TS for time stamp	<OBX.2>
Observation identifier	Yes	LOINC code and name for observation result. Local code where LOINC not available	See Codes for OBX Segments e.g. LOINC code for Weight measured in Kg is 3141-9	<OBX.3>
Observation value	Yes		The value of the observation	<OBX.5>
Observation units		Units relevant to result		<OBX.6>
Reference range		Reference range of result		<OBX.7>
Abnormal flag		Abnormal flag value		<OBX.8>
Observation result status	Yes	F (Constant)	F for final	<OBX.11>
Date/time of the observation	Yes	YYYYMMDD	Timestamp	<OBX.14>

Table 8 Observation Request Segment OBX

8. Message Fragments

MSH Segment

The first five lines are standard in all ORU_R01 messages and show the XML declaration, the XML names space and, in the <MSH.1> and <MSH.2> fields, the legacy field separator and encoding characters used in traditional encoded HL7.

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

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

The receiving application <MSH.5> is the Maternity and Newborn Clinical Management System (MN-CMS).

The receiving facility <MSH.6> is the individual maternity hospital, in the first instance Cork University Maternity Hospital (CUMH).

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

MSH.9 is the message type.

MSH.10 is the Message Control ID and uniquely identifies the message. The format used to generate the Message Control ID is "ORU" + date and time in the format YYYYMMDDHHMMSSSS + GP's 6 digit medical council number. The max length of this field is 50 characters.

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

MSH.12 is the HL7 version number, 2.4.

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

```
<MSH>
    <MSH.1>|</MSH.1>
    <MSH.2>^~\&amp;</MSH.2>
    <MSH.3>
      <HD.1>HELIXPM.HEALTHLINK.XX</HD.1>
      <HD.2/>
      <HD.3/>
    </MSH.3>
    <MSH.4>
      <HD.1>Dr. Smith, John</HD.1>
      <HD.2>123564.1234</HD.2>
      <HD.3>MCN.HLPracticeID</HD.3>
    </MSH.4>
    <MSH.5>
      <HD.1>MNCMS</HD.1>
      <HD.2/>
      <HD.3/>
    </MSH.5>
    <MSH.6>
      <HD.1>CUMH</HD.1>
      <HD.2>724</HD.2>
      <HD.3>L</HD.3>
    </MSH.6>
    <MSH.7>
      <TS.1>20160915103136</TS.1>
    </MSH.7>
    <MSH.9>
      <MSG.1>ORU</MSG.1>
      <MSG.2>R01</MSG.2>
    </MSH.9>
    <MSH.10>ORU20160914162054003564</MSH.10>
    <MSH.11>
      <PT.1>P</PT.1>
    </MSH.11>
    <MSH.12>
      <VID.1>2.4</VID.1>
    </MSH.12>
    <MSH.15>AL</MSH.15>
  </MSH>
```

Patient Identification Segment

The practice software system must send the patient demographics in the referral. If an Individual Health Identifier is available for the patient then this should be sent as a repeating PID.3 field.

```
<ORU_R01.PATIENT_RESULT>
    <ORU_R01.PATIENT>
      <PID>
        <PID.3>
          <CX.1>12345A</CX.1>
          <CX.4>
            <HD.1>PCRS</HD.1>
            <HD.2/>
            <HD.3/>
          </CX.4>
          <CX.5>GMS</CX.5>
        </PID.3>
        <PID.3>
          <CX.1>5393014123456789</CX.1>
          <CX.4>
            <HD.1>PCRS</HD.1>
            <HD.2/>
            <HD.3/>
          </CX.4>
          <CX.5>IHI</CX.5>
        </PID.3>
        <PID.5>
          <XPN.1>
            <FN.1>Mouse</FN.1>
          </XPN.1>
          <XPN.2>Monica</XPN.2>
          <XPN.5>Ms</XPN.5>
          <XPN.7>L</XPN.7>
        </PID.5>
        <PID.7>
          <TS.1>20130505</TS.1>
        </PID.7>
        <PID.8>F</PID.8>
        <PID.11>
          <XAD.1>
            <SAD.1>58 SEA VIEW</SAD.1>
          </XAD.1>
          <XAD.2>OCEAN ROAD</XAD.2>
          <XAD.3>COBH</XAD.3>
          <XAD.4>CO CORK</XAD.4>
        </PID.11>
      </PID>
```

Patient Visit Segment

This segment contains the Patient Class, PV1.2, always O for Outpatient, and information on the Medical Council Registration Number (MCRN) of the patient's GP. When the message is going from the Maternity Hospital to the GP System, PV1.7 will contain information on the responsible clinician in the Maternity Hospital.

If the message originates from an Obstetrician's private rooms, then PV1.9 is used to identify the private room. Within PV1.9, XCN.1 contains an identifier for the private rooms taken

from the Service Directory, XCN.2 and XCN.3 are the surname and first name of the Consultant Obstetrician, and XCN.13 is the identifier type code. The PV1.9 information for antenatal care messages originating in private rooms will come from MNCMS to GPs and should be reflected back to MNCMS in GP initiated antenatal messages.

```
<ORU_R01.PATIENT_VISIT>
      <PV1>
        <PV1.2>O</PV1.2>
        <PV1.7>
    <XCN.1>12345</XCN.1>
    <XCN.13>MCRN</XCN.13>
        </PV1.7>
        <PV1.9>
          <XCN.1>4226</XCN.1>
          <XCN.2>
            <FN.1>O'Reilly</FN.1>
          </XCN.2>
          <XCN.3>Barry</XCN.3>
          <XCN.13>HIDS</XCN.13>
        </PV1.9>
        <PV1.19/>
      </PV1>
    </ORU_R01.PATIENT_VISIT>
  </ORU_R01.PATIENT>
```

Observation Segments

These segments contain the clinical observations.

```
<ORU_R01.ORDER_OBSERVATION>
      <OBR>
        <OBR.1>1</OBR.1>
        <OBR.4>
          <CE.1>169614002</CE.1>
          <CE.2>Antenatal Care from general practitioner</CE.2>
          <CE.3>SCT</CE.3>
        </OBR.4>
        <OBR.7>
          <TS.1>20160929</TS.1>
        </OBR.7>
        <OBR.25>F</OBR.25>
      </OBR>
        <ORU_R01.OBSERVATION>
        <OBX>
          <OBX.1>1</OBX.1>
          <OBX.2>TS</OBX.2>
          <OBX.3>
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            <CE.2>LMP</CE.2>
            <CE.3>SCT</CE.3>
            <CE.4>8665-2</CE.4>
            <CE.5>LMP</CE.5>
            <CE.6>LN</CE.6>
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            <CE.1>161714006</CE.1>
```

```
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        <CE.4>11778-8</CE.4>
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      </OBX.14>
    </OBX>
    </ORU_R01.OBSERVATION>
     <ORU_R01.OBSERVATION>
    <OBX>
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9. Corrections

If a doctor or a midwife has sent an antenatal message and subsequently notes an error, then he or she can send a second message and indicate that this is a correction. Technically this is done by introducing a flag in a field in the Observation Request Segment (OBR.25) and the Observation Result Segment (OBX.11) to indicate that the message contains one or more corrected fields.

In a message that represents a correction, OBR.25 should be C and OBX.11 should be C for the one or more OBX segments that are corrected. It is important for the receiving system to highlight to the clinician that this is a correction message. Here is an example of the Observation segments for a correction message. In this use case the GP or Midwife corrects the Foetal Presentation from Cephalic to Breech and adds a Clinical note. OBR.25 is now C for correction and two OBX segments, for ‘Foetal presentation’ and ‘Clinical note’ show OBX.11 as C.

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```

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```

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```

10. Acknowledgements

When an antenatal shared care message is received by a hospital or a GP system, an acknowledgement needs to be generated and returned to the sender. The GP needs to be aware that no acknowledgement means the shared care information has not been received by the hospital.

- Vendors submit messages to Healthlink via the normal SubmitMessage API web service. See “WS HealthlinkOnline Tech GP Vendor v1.14.pdf” for the latest version of the vendor web service documentation.

1. Each submitted message will return an Ack/Nack from Healthlink, similar to the referral process, indicating the message has been received.
2. Where messages are integrated into hospital systems, as in the case of MN-CMS, MedLIS, etc., an Ack/Nack will be generated by the MN-CMS system for the vendor. Vendors can retrieve the acks using the RetrieveACKbyMessageID or GetAllUnprocessedMessages(ByMsgtype) web service methods. When

GetAllUnprocessedMessages(ByMsgtype) is invoked it will be necessary to flag messages as processed using the SetMessagesProcessed method. This step will not be required for the RetrieveACKbyMessageID API.

- MN-CMS messages processed to GPs via Healthlink will receive Ack/Nack messages from Healthlink.

ACK	General Acknowledgment	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

Table 9 Segments for Acknowledgement Message

Below is an XML sample of how an ACK message type is formatted.

```
<?xml version="1.0" encoding="UTF-8"?>
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    <MSH.2>^~\&amp;</MSH.2>
    <MSH.3>
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    </MSH.3>
    <MSH.4>
      <HD.1>CUMH</HD.1>
      <HD.2>9876</HD.2>
      <HD.3>L</HD.3>
    </MSH.4>
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      <HD.2></HD.2>
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    </MSH.5>
    <MSH.6>
      <HD.1>Dr. Smith, John</HD.1>
      <HD.2>123564.1234</HD.2>
      <HD.3>MCN.HLPracticeID</HD.3>
    </MSH.6>
    <MSH.7>
      <TS.1>20160915103256</TS.1>
    </MSH.7>
    <MSH.9>
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      <MSG.2>R01</MSG.2>
    </MSH.9>
    <MSH.10>ACK201609151032563564</MSH.10>
    <MSH.11>
      <PT.1>P</PT.1>
    </MSH.11>
    <MSH.12>
      <VID.1>2.4</VID.1>
    </MSH.12>
  </MSH>
  <MSA>
    <MSA.1>AA</MSA.1>
    <MSA.2>ORU20160914162054003564</MSA.2>
  </MSA>
</ACK>
```

The values for sending application and sending facility in the acknowledgement message are the same as the values for receiving application and receiving facility in the initiating antenatal shared care message and vice versa.

MSH.10 is the unique message control ID of the acknowledgement message and is not related to MSA.2, the message control ID of the shared care message that is being acknowledged. MSH.10 is generated using the format of the current date and time, up to the milliseconds. `Ex: ACKyyyyMMddHHmmssfff`

The three possible values for MSA.1, Acknowledgement Code are:

- AA Application Acknowledgement
- AE Application Error
- AR Application Reject

This tells you whether the original assessment message, as identified in MSA.2, has been accepted by the Maternity and Newborn Clinical Management System.

An Application Reject acknowledgement may mean one of two things:

- There is a major problem with the message and it cannot be validated by the receiving system;
- There is a problem with the receiving system and it is unable to process the message, though the message itself is fine;

An Application Error message means there is a problem with the content of the message. This should be diagnosed and corrected by the sending system before resending the message.

11. Code Tables

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

Table 10 Codes for GP Systems

Healthlink Message Type

Healthlink Message Type	**Message Type ID**
Outbound shared care, from MN-CMS to GP System	58
Inbound shared care, from GP System to MN-CMS	59

Table 11 Code for Healthlink Message Type

SNOMED CT names and codes for OBR segments

SNOMED CT name	**code**
Antenatal care from general practitioner	169614002
Antenatal clinic (maternity hospital)	394574007

Table 12 SNOMED CT names and codes for OBR segments

<MSH.11> Processing ID

Description	Code
Debugging	D
Production	P
Training	T

Table 13 Processing ID codes

HL7 Table 008, Acknowledgement Code (for original mode acknowledgements)

Value	Description
AA	Application Accept
AE	Application Error
AR	Application Reject

Table 14 Acknowledgement codes

12. Thanks

Parts of this draft specification are taken from existing Healthlink specifications for GP messaging. Thanks to Carl Beame for sharing the information captured at an antenatal visit in the CompleteGP practice software system.