

HISO 10011.4:2015 eDischarge Messaging Interim Standard

July 2015

Document information

HISO 10011.4:2015 eDischarge Messaging Standard is an interim standard for the New Zealand health and disability sector

ISBN 978-0-478-44842-9 (online)

Published in July 2015 by the Ministry of Health

Health Information Standards Organisation (HISO) is the expert advisory group on standards to the National Health IT Board

This document is posted on our website at <http://healthitboard.health.govt.nz/standards>

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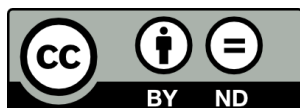
Health Sector Architects Group

Patients First Limited

HL7 New Zealand

Ministry of Health

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Contents

1	Introduction	1
1.1	Purpose	1
1.2	Scope	1
1.3	Structure of this document	2
1.4	Related specifications	2
2	Discharge summary messages	4
2.1	Message header segment	4
2.2	Referral information segment	5
2.3	Sender details segment	6
2.4	Receiver details segment	6
2.5	Patient identification segment	7
2.6	PDF attachment segment group	8
2.7	CDA attachment segment group	9
2.8	Encounter segment	11
2.9	Sample message	13
3	Amendment messages	14
4	Acknowledgement messages	15
4.1	Header segment	15
4.2	Acknowledgement segment	15
4.3	Error segment	16
4.4	Remaining segments	17
4.5	Sample acknowledgement message	17
4.6	Transport acknowledgement message	17

1 Introduction

This document presents the messaging standard for communicating an electronic discharge summary at transfer of care from the hospital to primary care providers.

1.1 Purpose

The purpose of the messaging standard is to ensure that a standard electronic discharge summary can be conveyed between hospital and primary care providers' information systems to support the transfer of care process. It is a standard for interoperability.

Public hospitals are implementing a common business process and common forms for electronic discharge, a key initiative under the National Health Information Technology Plan. Electronic medicines reconciliation is the related process that ensures accurate information about patient medications, allergies and adverse reactions is communicated at transfer of care and with the discharge summary.

The messaging standard supports the business process defined by the National Information Clinical Leadership Group for medicines reconciliation and electronic discharge.

The messaging standard arises from the following earlier work:

- An HL7 version 2.4 implementation guide developed in 2010 by Counties Manukau District Health Board and Health Alliance that describes how a referral message with a Portable Document Format (PDF) attachment can be constructed to convey an easily displayed discharge summary – several DHBs have implemented solutions
- Further development in 2011 led by Patients First to add an HL7 Clinical Document Architecture (CDA) attachment to the message so that structured data can be imported into a General Practice patient management system – a prototype was tested but never rolled out
- In February 2014, interim standard *HISO 10041.1 CDA Templates for Medications, Allergies and Adverse Reactions* was published to support the communication of this content as part of the discharge summary
- Patients First completed work in April 2014 to produce the first draft of this document.

1.2 Scope

This standard defines a message format and a messaging protocol for communicating electronic discharge summaries. It uses and conforms to the HL7 version 2.4 standard.

The standard describes the mechanics of sending and receiving messages that contain discharge summary documents. It describes the message format and the messaging protocol that exists between the information systems at either end.

The standard describes how messages are addressed from the sender to the receiver and how they are acknowledged. It also covers how updated documents are sent and acknowledged.

The standard describes how to construct messages with particular attachments:

- a PDF document that represents the displayable version of the discharge summary, conforming to the agreed layout
- a CDA document that contains the structured data associated with the discharge summary, suitable for importing into the receiving system.

See the relevant specifications for a definition of the content of these attachments.

The key use case scenarios are:

- Sending a discharge summary from a hospital to a general practice
- Sending an amended discharge summary
- Acknowledging receipt of a discharge summary and acceptance of transfer of care.

The standard is primarily about discharge summaries and using HL7 version 2.4 point-to-point messaging to copy these documents from the hospital to primary care. The same rules can be extended to communicating other clinical document types where the use cases are similar. Note, however, that clinical documents of all types will increasingly be shared via clinical data repositories.

1.3 Structure of this document

This document is structured by message type.

The three sections cover:

- Discharge summary messages
- Amendment messages
- Acknowledgement messages.

1.4 Related specifications

This standard references the following HISO standards:

- HISO 10011.2 Referrals, Status and Discharges Messaging Standard
- HISO 10040 Health Information Exchange Architecture
- HISO 10041.1 Clinical Document Architecture Templates for Medications, Allergies and Adverse Reactions
- HISO 10043 Clinical Document Architecture Common Templates
- HISO 10046 Consumer Health Identity Standard.

The key industry standards referenced are:

- HL7 version 2.4 (www.hl7.org)
- Logical Observation Identifiers, Names and Codes (LOINC) (<http://loinc.org>)

Note that this document contains material from the LOINC table and the LOINC clinical document ontology, which are copyright (c) 1995-2014 Regenstrief Institute Inc. These

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See also:

- High Level Requirements for eDischarge, National Information Clinical Leadership Group, June 2010 (<http://healthitboard.health.govt.nz>)
- National Health IT Plan Update 2013/14 (<http://healthitboard.health.govt.nz>).

2 Discharge summary messages

This standard uses the HL7 version 2.4 message type called REF^I12 to provide the structure of discharge summary messages.

Each discharge summary message identifies the patient and the hospital event, and is addressed from one provider to another. The message has two attachments:

- a PDF document that represents the displayable version of the discharge summary
- a CDA document that contains structured medications, allergies and adverse reactions information, which the receiving system can import.

PDF is a suitable format because it is supported on most platforms and viewers are available for free.

The segments of a discharge summary message are as follows:

Segment code	Description
MSH	Message header segment
RF1	Referral information segment
PRD	Provider details segment representing the sender
PRD	Provider details segment representing the receiver
PID	Patient identification segment
ORC	PDF attachment segment group
OBR	
OBX	
ORC	CDA attachment segment group
OBR	
OBX	
PV1	Patient visit details segment

Note that:

- this is the required ordering of segments
- all segments are mandatory
- nested segments within a segment group are shown indented.

2.1 Message header segment

Fields in the MSH segment provide message control information and denote the sender and the intended recipient of the message.

The sender and the receiver are facilities recorded in the Health Provider Index (HPI) and each has a published electronic address that is either an HPI number or – preferably – a uniform resource indicator (URI). No particular URI scheme is specified, although the examples show URIs that mimic email addresses.

All fields listed in the table are mandatory and must be populated in the MSH segment, while all fields not listed should be left blank. Refer to the HL7 version 2.4 standard for the correct field lengths and data types.

Field code	Description	Value domain
MSH segment		
MSH-1	Field separator	Fixed value ' '
MSH-2	Encoding characters	Fixed value '^~\&'
MSH-4	Electronic address for sender	URI, eg 'emergency@hutt-hospital.health.nz'
MSH-6	Electronic address for receiver	URI, eg 'doctors@kowhai.health.nz'
MSH-7	Creation datetime	Format YYYYMMDDHHMMSS
MSH-9	Message type	Fixed value 'REF^I12^REF_I12'
MSH-10	Message control identifier	Source system identifier
MSH-11	Processing identifier	Fixed value 'P'
MSH-12	Version identifier	Fixed value '2.4^NZL^1.0'
MSH-15	Accept acknowledgement type	Fixed value 'AL'
MSH-16	Application acknowledgement type	Fixed value 'AL'

2.2 Referral information segment

The RF1 segment indicates that this is a discharge summary message (as opposed to a clinical letter, for example), and provides the identifier assigned to the discharge summary at source.

Field code	Description	Value domain
RF1 segment		
RF1-3		
RF1-3.1	Referral type	Fixed value 'DIS' (discharge summary)
RF1-3.2	Title	Free text, eg 'Hutt Hospital discharge summary'

RF1-6	Discharge summary identifier	Source system discharge summary identifier
-------	------------------------------	--

2.3 Sender details segment

The health facility that is the sender of the message is detailed in the first of two PRD segments.

The HPI facility number and the corresponding name and address are recorded.

The sender may be a hospital, an accident and medical centre, an ambulance service or any other kind of health facility that creates a care summary document.

All fields listed in the table are mandatory.

Field code	Description	Value domain
PRD segment		
PRD-1	Provider role	Fixed value 'RP' (referring provider)
PRD-2	Provider name	Example 'Middlemore Hospital^F03029-D'
PRD-2.1	Facility name	Text
PRD-2.2	Facility identifier	HPI number
PRD-3	Provider address	Example '100 Hospital Road^Otahuhu^Auckland 2025'
PRD-3.1	Street address	Text
PRD-3.2	Suburb	Text
PRD-3.3	City or town	Text

2.4 Receiver details segment

The facility and the individual practitioner to whom the message is addressed are recorded in a second PRD segment.

The HPI facility number and the corresponding name and address are recorded.

All fields listed in the table are mandatory.

Field code	Description	Value domain
PRD segment		
PRD-1	Provider role	Fixed value 'GP'
PRD-2	Provider name	Example 'SMITH^JOHN^^^MR'

PRD-2.1	Surname	Text
PRD-2.2	First name	Text
PRD-2.3	Middle names	Text
PRD-2.5	Title	Text
PRD-3	Provider address	Example '93 Rangers Road^Penrose^Auckland 1061'
PRD-3.1	Street address	Text
PRD-3.2	Suburb	Text
PRD-3.3	City or town	Text
PRD-7	Provider identifier	HPI person number

2.5 Patient identification segment

The PID segment identifies the patient and includes name and address information.

All fields listed in the table are mandatory.

Field code	Description	Value domain
PID segment		
PID-3	Patient identifier	Example 'ABC1235^^NHI'
PID-3.1	NHI number	NHI number
PID-3.3	Patient identifier scheme	Fixed value 'NHI'
PID-5	Patient name	Example 'SMITH^JOHN^ALFRED BRIAN^^MR'
PID-5.1	Surname	Text
PID-5.2	First name	Text
PID-5.3	Middle names	Text
PID-5.5	Title	Text
PID-7	Birth date	Date format YYYYMMDD
PID-8	Gender	Valid values: <ul style="list-style-type: none"> 'F' – female 'M' – male 'O' – other

		<ul style="list-style-type: none"> 'U' – unknown
PID-10	Ethnicity (0 - 6 instances)	Level 4 ethnicity codes (www.health.govt.nz)
PID-11	Patient address	Example '93 Rangers Road^Penrose^Auckland 1061'
PID-11.1	Street address	Text
PID-11.2	Suburb	Text
PID-11.3	City or town	Text
PID-30	Death indicator	Valid values: <ul style="list-style-type: none"> 'Y' – patient known to have died 'N' – otherwise

2.6 PDF attachment segment group

The PDF document attached to the message as the displayable version of the discharge summary is contained in an OCR/OBR/OBX segment group. The PDF document is placed in the OBX-5 field.

Some fields are populated differently for amended versions of the discharge summary versus the original.

The PDF segment group has the following structure:

Field code	Description	Value domain
ORC segment		
ORC-1	Order control	Valid values: <ul style="list-style-type: none"> 'NW' (new) – original 'RO' (replacement) – update
ORC-2	Placer order number	
ORC-2.1	Document number	UUID
ORC-4	Document group number	UUID
ORC-12	Clinician responsible	Example '^Elliot^Jane^^^Dr'
ORC-12.1	Provider identifier	HPI number
ORC-12.2	Surname	Text
ORC-12.3	First name	Text

Field code	Description	Value domain
ORC-12.4	Middle names	Text
ORC-12.6	Title	Text
ORC-16	Order control reason code	Fixed value 'ATT' (attachment)
OBR segment		
OBR-2	Placer order number	Copy value from ORC-2 field
OBR-4	Universal service identifier	Fixed value 'LIT' (literal)
OBR-7	Document creation datetime	Copy value from MSH-7 field
OBR-16	Clinician responsible	Copy value from ORC-12 field
OBR-25	Result status	Valid values: <ul style="list-style-type: none"> 'F' (final) – original document 'C' (correction) – amendment
OBX segment		
OBX-2	Value type	Fixed value 'ED' (encapsulated data)
OBX-3	Observation identifier	
OBX-3.1	Identifier	Fixed value 'PDF' (Portable Document Format)
OBX-3.2	Text	Fixed value 'PDF display format'
OBX-3.3	Coding system name	Fixed value '99NZATF'
OBX-5	Observation value	Example '^^^Base64^AAEIHMgqX+...'
OBX-5.4	Encoding	Fixed value 'Base64'
OBX-5.5	Data	Base64 encoded document content
OBX-11	Observation result status	Copy value from field OBR-25

2.7 CDA attachment segment group

The CDA document attached to the message is placed in a second ORC/OBR/OBX segment group, following the segment group containing the PDF document.

For a hospital discharge summary, the CDA document will conform to *HISO 10041.1 CDA Templates for Medications, Allergies and Adverse Reactions* in its XML structure and carry

LOINC code 56445-0 to indicate its medications related content. Other care summary document types will conform to different CDA based standards.

The CDA document must be Base64 encoded and appear as the first part within a MIME package, with the content type 'application/x-hl7-cda-level-one+xml'. The MIME package itself is not Base64 encoded.

Where the CDA document has attachments – such as images attached to an ambulance care summary – these must also be Base64 encoded and follow the CDA document in the same MIME package.

HL7 delimiters and other non-printing ASCII and non-ASCII characters must be escaped by the defined HL7 sequences. For example, a carriage return and line feed pair is escaped as follows: '\XoDoA\`.

The CDA segment group has the following structure:

Field code	Description	Value domain
ORC segment		
ORC-1	Order control	Fixed value 'IN' (information)
ORC-2	Placer order number	UUID
ORC-2.1	Entity identifier	
ORC-4	Document group number	
ORC-12	Clinician responsible	Example '^Elliot^Jane^^^Dr'
ORC-12.1	Provider identifier	HPI number
ORC-12.2	Surname	Text
ORC-12.3	First name	Text
ORC-12.4	Middle names	Text
ORC-12.6	Title	Text
ORC-16	Order control reason code	Fixed value 'ATT' (attachment)
OBR segment		
OBR-2	Placer order number	Copy value from ORC-2 field
OBR-4	Universal service identifier	Fixed value 'LIT' (literal)
OBR-7	Document creation datetime	Copy value from MSH-7 field
OBR-16	Clinician responsible	Copy value from ORC-12 field
OBR-25	Result status	Valid values:

Field code	Description	Value domain
		<ul style="list-style-type: none"> 'F' (final) – original document 'C' (correction) – amendment
OBX segment		
OBX-5		
OBX-5.2	Observation value	Fixed value 'multipart'
OBX-5.3	Type of data	Fixed value '-hl7-cda-level-one'
OBX-5.4	Data subtype	Fixed value 'A' (ASCII)
OBX-5.5	Encoding	Base64 encoded document content
	Data	

2.8 Encounter segment

The PV1 segment contains basic details about the hospital stay.

See the Health Specialty Code Table on the Ministry of Health website for a complete list of the recognised health specialties.

Field code	Description	Value domain
PV1 segment		
PV1-2	Patient class	Valid values: <ul style="list-style-type: none"> 'E' – emergency 'I' – inpatient 'O' – outpatient 'P' – pre-admit 'B' – obstetrics 'U' – unknown 'N' – not applicable
PV1-10	Health specialty code	Health Specialty Code Table (www.health.govt.nz) Examples: <ul style="list-style-type: none"> 'M00' – General medicine 'M05' – Emergency medicine 'M10' – Cardiology

		<ul style="list-style-type: none">• 'M14' – Specialist paediatric cardiology
PV1-19	Hospital admission number	Local hospital admission number

2.9 Example message

Below is an example discharge summary message.

Base64 encoded data in the OBX segments has been truncated for readability.

```
MSH|^~\&|emergency@middlemore.health.nz|doctors@papakura.health.nz|20140428172422||REF^I12^REF_I12|hC300181|P|2.4^NZL^1.0||AL|AL
RF1||DIS^CMDHB-Emergency Medi-EDSDoc-v1||3809255
PRD|GP|Park^Gordon^^^Dr|139 Great South Road^Papakura 2110|||20726
PID||HGX1407^^NHI|Prentice^Mark||19600519|M||153 Manuroa Road^Takanini^Auckland 2112
ORC|IN|FB9964-G:EDS:1:15783348:||||||^Johnston^Brian|||ATT
OBR||FB9964-G:EDS:1:15783348:|LIT||||||^Johnston^Brian|||||F
OBX|ED|PDF^Display format in PDF^99NZATF|^Base64^JVBERi0xLjQKJeLjz9MKNCAwIG9iaA8PC9MZW5ndGgg...||||F
ORC|IN|1586|ordernosender|||||HPI_FAC^Test^Test|
OBR||1586|ordernosender|56445-0^Medication
List^LN||20150410|||||HPI_FAC^Test^Test||||20140510||F|||||||||||||HPI_FAC1^HF|HPI_FAC2^HF
OBX|ED|56445-0^Medication List^LN|^multipart^hl7-cda-level-one^A^Message-ID:
<267c323e65aa4904a2bd09ddbfcf70b7@f2c3e221aafe48af849c262cc8e2d68a>\X0D0A\Date: Tue, 10 May 2011 01:47:07 GMT\X0D0A\Mime-Version:
1.0\X0D0A\Content-Type: multipart/mixed;\X0D0A\ boundary='part_046c80b8_8439_4533_8cdd_6bcc90956132'\X0D0A\X0D0A\--
part_046c80b8_8439_4533_8cdd_6bcc90956132\X0D0A\Content-Transfer-Encoding: base64\X0D0A\Content-Type: text/xml; charset='utf-
8'\X0D0A\X0D0A\PENsaW5pY2FsRG9jd...32--\X0D0A\|||||F
PV1||||||M05||||||E002304344
```

3 Amendment messages

Completed discharge summaries are sometimes amended and resent with new information. The messaging process enables these updates to be conveyed.

Updating a discharge summary transport message follows the existing HL7 v2.4 based discharge summary workflow requirements.

The method for handing amended messages is as follows:

- Amended messages will appear as a new item in the receiver's inbox, along with the date of receipt by the GP and the name of the patient
- The amended version of a document does not overwrite any earlier version that has already been received
- Receiving systems may be able to link amended versions of messages with the original message to make it possible to see all versions of a document together
- The message sender will control the contents of the subject line.

The original document identifier and a sequential version number are included in the message.

In addition, the discharge summary PDF document itself will be versioned and should have an alterations section listing changes from the previous version.

If the content of the CDA document is changed, the versioning requirements applicable are specified by *HISO 10043 CDA Common Templates Standard*.

4 Acknowledgement messages

The same messaging pair – ie the transmission of the discharge summary and accept/decline – is supported for updated discharge summaries.

Acknowledgements for the REF^I12 message are provided by way of an RRI^I12 referral response message.

Acknowledgement messages are structured as follows:

Segment code	Description
MSH	Message header segment
MSA	Message acknowledgement segment
[ERR]	Optional error detail segment (included only when reporting an error)
RF1	Referral information segment
PRD	Provider details segment
PID	Patient identification segment

4.1 Header segment

The MSH segment is populated in the same way as in the original message, except as noted.

Field code	Description	Value domain
...		
MSH-2	Application name (sending the acknowledgment)	Text
...		
MSH-9	Message type	Fixed value 'RRI^I12'
...		

4.2 Acknowledgement segment

The MSA segment contains information sent in acknowledging another message.

Field code	Description	Value domain
MSA segment		
MSA-1	Acknowledgement code	Values:

		<ul style="list-style-type: none"> • 'AA' (application accept) • 'AE' (application error) • 'AR' (application reject).
MSA-2	Message control identifier	Copy value from field MSH-10

4.3 Error segment

The acknowledgement message includes an ERR segment when the incoming message is found to have a format error.

Error type and location are reported.

A pair of data elements indicates the location of the error: the type of the segment and the ordinal number of the segment within segments of that type. For example, an error found in the MSH segment would be reported as 'MSH', 1.

Field code	Description	Value domain
ERR segment		
ERR-1		
ERR-1.1	Segment code	'MSH', 'RF1', 'PRD', 'PRD', 'PID', 'ORC', 'OBR', 'OBX', 'ORC', 'OBR', 'OBX', 'PV1'
ERR-1.2	Segment number	1, 2
ERR-1.3	Field number	1, 2, 3, ...
ERR-1.4	Error code	Valid values: <ul style="list-style-type: none"> • '0' – success, message accepted • '100' – segment sequence error • '101' – required field missing • '102' – data type error • '103' – table value not found • '200' – unsupported message type • '201' – unsupported event code • '202' – unsupported processing identifier • '203' – unsupported version identifier

		<ul style="list-style-type: none"> '204' – unknown key identifier.
--	--	---

4.4 Remaining segments

The remaining segments in the acknowledgement message are populated as follows. Refer to the earlier description of the PID segment for further details.

Field code	Description	Value domain
RF1 segment		
RF1-6		Original referral identifier
PRD segment		
PRD-1		Provider role
PID segment		
...		

4.5 Example acknowledgement message

Here is an example acknowledgement message:

```
MSH|^~\&|MEDTECH32|testedi||CMDHB|201410201209||RRI^I12|hc94641|P|2.4||
MSA|AA|hc94641|||
RF1|||||2657598
PRD|GP
PID|||ABC1235^^NHI||Curtis^Mary||19870208|F|||123 Ballet Avenue^Sandringham^Auckland 1025
```

4.6 Transport acknowledgement message

This is a standard HL7 ACK message that notifies the sender that the message has been successfully delivered to the receiver system and could be parsed. An acknowledgement message is returned automatically by the system and does not indicate that a person has seen the message.

Note that the specification does not say what the original sending system should do on receiving a transport acknowledgement message.