Integrating the Healthcare Enterprise

IHE IT Infrastructure Technical Framework Supplement 2008-2009

Patient Identifier Cross-Reference HL7 V3 (PIXV3) and Patient Demographic Query HL7 V3 (PDQV3)

Draft for Trial Implementation

November 10, 2008

Foreword

Integrating the Healthcare Enterprise (IHE) is an initiative designed to stimulate the integration of the information systems that support modern healthcare institutions. Its fundamental objective is to ensure that in the care of patients all required information for medical decisions is both correct and available to healthcare professionals. The IHE initiative is both a process and a forum for encouraging integration efforts. It defines a technical framework for the implementation of established messaging standards to achieve specific clinical goals. It includes a rigorous testing process for the implementation of this framework. And it organizes educational sessions and exhibits at major meetings of medical professionals to demonstrate the benefits of this framework and encourage its adoption by industry and users.

The approach employed in the IHE initiative is not to define new integration standards, but rather to support the use of existing standards—HL7, DICOM, IETF, and others—as appropriate in their respective domains in an integrated manner, defining configuration choices when necessary. IHE maintain formal relationships with several standards bodies including HL7, DICOM and refers recommendations to them when clarifications or extensions to existing standards are necessary.

This initiative has numerous sponsors and supporting organizations in different medical specialty domains and geographical regions. In North America the primary sponsors are the Healthcare Information and Management Systems Society (HIMSS) and the Radiological Society of North America (RSNA). IHE Canada has also been formed. IHE Europe (IHE-EUR) is supported by a large coalition of organizations including the European Association of Radiology (EAR) and European Congress of Radiologists (ECR), the Coordination Committee of the Radiological and Electromedical Industries (COCIR), Deutsche Röntgengesellschaft (DRG), the EuroPACS Association, Groupement pour la Modernisation du Système d'Information Hospitalier (GMSIH), Société Francaise de Radiologie (SFR), Società Italiana di Radiologia Medica (SIRM), the European Institute for health Records (EuroRec), and the European Society of Cardiology (ESC). In Japan IHE-J is sponsored by the Ministry of Economy, Trade, and Industry (METI); the Ministry of Health, Labor, and Welfare; and MEDIS-DC; cooperating organizations include the Japan Industries Association of Radiological Systems (JIRA), the Japan Association of Healthcare Information Systems Industry (JAHIS), Japan Radiological Society (JRS), Japan Society of Radiological Technology (JSRT), and the Japan Association of Medical Informatics (JAMI). Other organizations representing healthcare professionals are invited to join in the expansion of the IHE process across disciplinary and geographic boundaries.

The IHE Technical Frameworks for the various domains (IT Infrastructure, Cardiology, Laboratory, Radiology, etc.) defines specific implementations of established standards to achieve integration goals that promote appropriate sharing of medical information to support optimal patient care. It is expanded annually, after a period of public review, and maintained regularly

through the identification and correction of errata. The current version for these Technical Frameworks may be found at www.ihe.net/Technical_Framework.

The IHE Technical Framework identifies a subset of the functional components of the healthcare enterprise, called IHE Actors, and specifies their interactions in terms of a set of coordinated, standards-based transactions. It describes this body of transactions in progressively greater depth. The volume I provides a high-level view of IHE functionality, showing the transactions organized into functional units called Integration Profiles that highlight their capacity to address specific clinical needs. The subsequent volumes provide detailed technical descriptions of each IHE transaction.

This IHE IT Infrastructure Technical Framework Supplement is issued for Trial Implementation through March 2009.

Comments and change proposals arising from Trial Implementation may be submitted to http://forums.rsna.org under the forum:

"*Integrating the Healthcare Enterprise*"

Select the sub-forum:

"*IHE IT Infrastructure 2008 Supplement for Trial Implementation*"

The IHE IT Infrastructure Technical Committee will address these comments resulting from implementation, connect-a-thon testing, and demonstrations such as HIMSS 2009. Final text is expected to be published in June 2009.

Contents

Open Issues

1. This supplement re-defines the HL7 V3 versions of the PIX and PDQ profiles as separate profiles, while recognizing that both the HL7 V3 and HL7 V2 versions provide the same functionality. This is achieved vie numerous references to the existing profiles. Need to determine if this approach is appropriate.
2. Suggestions for more appropriate names for the profiles and the transactions, if any, are more than welcome.
3. IHE-specific restrictions – the RMIM diagrams here are restrictions on the full HL7 RMIMs. Should this result in IHE defined messages for PIX/PDQ purposes? Should we use the HL7-defined schemas (the current approach), or provide IHE-restricted schemas, which reflect the restrictions represented in the diagrams?
4. Add a section to volume 1 on transition between the original profiles and the HL7 V3 profiles
5. After Trial implementation, incorporate changes to Volume 1 within the existing sections for PIX and PDQ.
6. In addition to the model diagrams, provide XML snippets, similar to the PCC content profiles.
7. Once the specific recommended audit messages are added to the original PIX and PDQ transactions, the Change proposal will be incorporated in the HL7 V3 transactions. Currently this information is absent from the Security Requirements of the transactions.

Closed Issues

1. Use the Patient Topic of the HL7 standard. At the time the previous publication for Trial Implementation was published in 2006, there was no Patient Topic content available from HL7. With the adoption of the Patient Topic DSTU, these profiles can better represent patient specific semantics. The actual changes to the message payload is minimal, as the Patient role in HL7 V3 represents a Person entity, therefore most of the work from the previous Trial Implementation Version of the profiles were reused.
2. Add web services definitions to the transactions
3. Clarify the use of transmission and control-act wrappers
4. Clarify the continuation protocol for PDQV3 queries
5. Update Appendix E
6. Replace examples with references to the IHE ftp site
7. Update Appendix R
8. Use of the current HL7 transmission wrappers (MCCI_RM000100, MCCI_RM000200, MCCI_RM000300). The new ballots from HL7 contain preliminary content, which marks these wrappers as deprecated, however they are no deprecated yet, as MCCI_RM002[123]00 is not even in DSTU, and the actual replacement for MCCI_RM000[123]00 will come out this fall for the first time as an informative document. We have confirmation from HL7 that MCCI_RM000[123]00 will be supported until at least 2012. The restrictions in the IHE specification are made with the new structures in mind, so that only minimal changes (if any) will be required in the IHE specifications.

The IHE IT Infrastructure Technical Committee will address the comments resulting from implementation, Connectathon testing, and demonstrations such as HIMSS 2008. Final Text for the Trial Implementation version is expected to be published in August of 2008.

1.1 Profile Abstract

This supplement provides a new version of the Patient Identifier Cross-Referencing and Patient Demographics Query profiles leveraging HL7 version 3 and SOAP-based web services. The scope of the Patient Identity Feed, the PIX Query, the PIX Update Notification, and the Patient Demographics Query is identical as that for the HL7 v2.5 messages (i.e. same transaction semantics, same message constraints). In this version we are providing more details for implementers of the individual transactions, and we are using the new 2007 DSTU of the HL7 V3 Patient Topic as the basis of the messages in the transaction. The actual changes to the format compared to the previous year are minimal, as the message content only changes the focal class from identified entity to patient.

The Patient Demographic and Visit Query transaction is not included in the version 3 stream as this is not yet a balloted standard.

1.2 Organization of the Documentation

This supplement defines two new Integration Profiles in Vol. 1 (as subsections of sections 5 and 8), and provides alternative IHE transactions for the Patient Identity Feed (Section 3.44 in Vol. II), the Patient Identity Query (Section 3.45 in Vol. II), the Patient Update Notification (Section 3.46 in Vol. II), and the Patient Demographic Query (Section 3.47 in Vol. II) using HL7 v3. Each transaction shares common use cases and other sections with the corresponding HL7 v2.5 part, which is indicated by directly referencing existing content.

Volume I – Integration Profiles

Add the following to the end of the profile list in section 1.7

Patient Identifier Cross-referencing HL7 V3 (PIXV3) – provides cross-referencing of patient identifiers from multiple Patient Identifier Domains. These patient identifiers can then be used by identity consumer systems to correlate information about a single patient from sources that know the patient by different identifiers. This profile uses HL7 V3 as the message format, and SOAP-based web services for transport.

Patient Demographics Query HL7 V3 (PDQV3) - provides ways for multiple distributed applications to query a central patient information server for a list of patients, based on user-defined search criteria, and retrieve a patient's demographic information directly into the application. This profile uses HL7 V3 as the message format, and SOAP-based web services for transport.

Add the following as sections 2.2.x and 2.2.y

1.2.1 Patient Identifier Cross-referencing HL7 V3 (PIXV3)

The functionality of this profile is identical to the PIX profile described in section 2.2.3. The differences are in the format of the messages, and in the use of SOAP-based web services. These changes make this profile well suited for use within an existing IT infrastructure for cross-enterprise data access and exchange. The PIXV3 profile supports the cross-referencing of patient identifiers from multiple Patient Identifier Domains. These cross-referenced patient identifiers can then be used by "identity consumer" systems to correlate information about a single patient from sources that "know" the patient by different identifiers. This allows a clinician to have more complete view of the patient information.

1.2.2 Patient Demographics Query HL7 V3 (PDQV3)

The functionality of this profile is identical to the PDQ profile described in section 2.2.6. The differences are in the format of the messages, and in the use of SOAP-based web services. These changes make this profile well suited for use within an existing IT infrastructure for cross-enterprise data access and exchange. The PDQV3 profile provides ways for multiple organizations, or multiple distributed applications to query a central patient information server for a list of patients, based on user-defined search criteria, and retrieve a patient's demographic information directly into the application.

2 Patient Identifier Cross-referencing HL7 V3 (PIXV3)

The ***Patient Identifier Cross-referencing HL7 V3 Integration Profile (PIXV3)*** is targeted at cross-enterprise Patient Identifier Cross-reference Domains (as defined in ITI TF-1: 5) as well as healthcare enterprises with developed IT infrastructure. The discussion in ITI TF-1: 5 fully applies here, with the obvious adjustments to the referenced transactions.

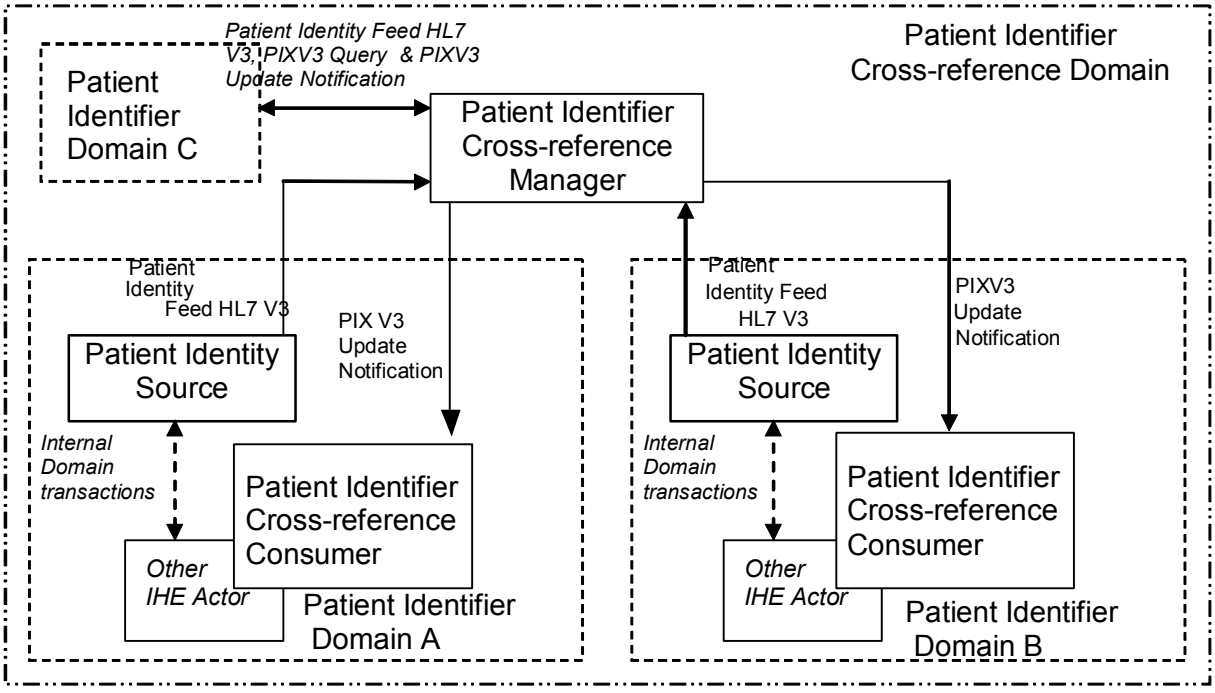


Figure 2-1 Process Flow with Patient Identifier Cross-referencing HL7 V3

2.1 Actors/Transactions

The actors in this profile are the same as the actors defined in the PIX profile (ITI TF-1: 5.1). Figure X.1-1 shows the actors directly involved in the Patient Identifier Cross-referencing HL7 V3 Integration Profile and the relevant transactions between them. Other actors that may be indirectly involved due to their participation in other related profiles are not shown.

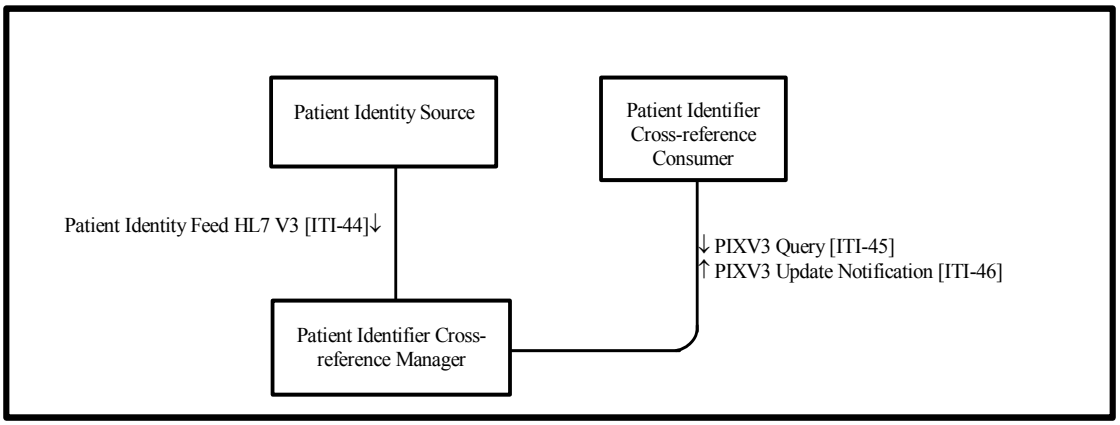


Figure 2.1-1 Patient Identifier Cross-referencing HL7 V3 Actor Diagram

Table X.1-1 lists the transactions for each actor directly involved in the Patient Identifier Cross-referencing Profile. In order to claim support of this Integration Profile, an implementation must perform the required transactions (labeled "R"). Transactions labeled "O" are optional. A complete list of options defined by this Integration Profile and that implementations may choose to support is listed in the ITI TF-1: X.2.

Table 2.1-1 Patient Identifier Cross-referencing HL7 V3 Integration Profile - Actors and Transactions

Actors	Transactions	Optionality	Section in Volume
Patient Identity Source	Patient Identity Feed HL7 V3[ITI-44]	R	ITI TF-2: 3.44
Patient Identifier Cross-reference Consumer	PIXV3 Query[ITI-45]	R	ITI TF-2: 3.45
	PIXV3 Update Notification [ITI-46]	O	ITI TF-2: 3.46
Patient Identifier Cross-reference Manager	Patient Identity Feed HL7 V3[ITI-44]	R	ITI TF-2: 3.44
	PIXV3 Query[ITI-45]	R	ITI TF-2: 3.45
	PIXV3 Update Notification[ITI-46]	R	ITI TF-2: 3.46

The transactions in this profile directly correspond to the transactions used in the PIX profile (ITI TF-1: 5) and provide the identical functionality. Table X.1-2 describes this correspondence.

Table 2.1-2 Transactions Correspondence between the PIX and PIXV3 profiles

Transactions in PIX	Section in Volume	Transactions in PIXV3	Section in Volume
Patient Identity Feed [ITI-8]	ITI TF-2: 3.8	Patient Identity Feed HL7 V3[ITI-44]	ITI TF-2: 3.44
PIX Query[ITI-9]	ITI TF-2: 3.9	PIXV3 Query[ITI-45]	ITI TF-2: 3.45
PIX Update Notification [ITI-10]	ITI TF-2: 3.10	PIXV3 Update Notification [ITI-46]	ITI TF-2: 3.46

2.2 Patient Identifier Cross-referencing HL7 V3 Integration Profile Options

Options that may be selected for this Integration Profile are listed in the Table X.2-1 along with the Actors to which they apply. Dependencies between options when applicable are specified in notes.

Table 2.2-1 Patient Identifier Cross-referencing HL7 V3 - Actors and Options

Actor	Options	Vol & Section
Patient Identity Source	No options defined	--
Patient Identifier Cross-reference Manager	No options defined	--
Patient Identifier Cross-reference Consumer	PIXV3 Update Notification Transaction	ITI TF-2: 3.46

2.3 Patient Identifier Cross-referencing HL7 V3 Integration Profile Process Flows

Sections ITI TF-1: 5.3.1 and ITI TF-1: 5.3.2 describe use cases that this profile addresses. Figures 5.3-1 and 5.3-2 also apply with the changes to the corresponding PIXV3 transactions as specified in table X.1-2.

2.4 Relationship between the PIXV3 Integration Profile and eMPI

The discussion in section ITI TF-1: 5.4 fully apply to this profile.

2.5 Patient Identifier Communication Requirement

The patient identifier in HL7 V3 messages is represented by the II data type. This data type has two components: a root, and an extension. For compatibility with the use of patient identifiers in profiles using HL7 V2 messages, and with the specification of the patient identifier in the XDS profile, the patient identifier SHALL be represented as a root and an extension, where the root is an appropriately assigned OID. The direct correspondence between the II data type and the HL7 Version 2.5 CX data type (used in field PID-3) is shown in Appendix R.

3 Patient Demographics Query HL7 V3 (PDQV3)

3.1 Actors/Transactions

The actors in this profile are the same as the actors defined in the PDQ profile (ITI TF-1: 8.1).

Table 3.1-1. Patient Demographics Query HL7 V3 Integration Profile - Actors and Transactions

Actors	Transactions	Optionality	Section in Vol. 2
Patient Demographics Consumer	Patient Demographics Query HL7 V3	R	ITI TF-2: 3.47
Patient Demographics Supplier	Patient Demographics Query HL7 V3	R	ITI TF-2: 3.47

The transaction in this profile directly corresponds to one of the transactions used in the PDQ profile (ITI TF-1: 8) and provide the identical functionality. Table X.1-2 describes this correspondence.

Table 3.1-2 Transactions Correspondence between the PDQ and PDQV3 profiles

Transactions in PDQ	Section in Volume	Transactions in PDQV3	Section in Volume
Patient Demographics Query [ITI-21]	ITI TF-2: 3.21	Patient Demographics Query HL7 V3 [ITI-47]	ITI TF-2: 3.47

3.2 Patient Demographics Query HL7 V3 Integration Profile Options

There are no options currently specified for this profile. Note that unlike the PDQ profile there is no transaction which corresponds to the Patient Demographics and Visit query (ITI-22).

Table 3.2-1 Patient Demographics Query HL7 V3 - Actors and Options

Actor	Options	Vol & Section
Patient Demographics Consumer	No options defined	--
Patient Demographics Supplier	No options defined	--

3.3 Patient Demographics Query HL7 V3 Process Flow

Section ITI TF-1: 8.3 describes use cases that this profile addresses. Figure 8.3-1 also applies to this profile with the changes to the corresponding PDQV3 transactions as specified in table Y.1-2, and omitting transaction ITI-22, which has no correspondence in this profile.

3.3.1 Combined Use of PDQV3 with other IHE Workflow Profiles

In addition to the discussion in section ITI TF-1: 8.3.1, the use of web services as the transport in the transactions in this profile makes it well suited in cases where other web services-based profiles are used, like XDS.b and PIXV3.

3.3.2 Supplier Data Configuration

The Patient Demographics Supplier Actor provides demographics information about possible matches to the parameters of the query. As described in ITI TF-2: Appendix M, while it is possible for the supplier to have demographics information from multiple domains, only a single set of demographics shall be returned by the supplier.

If the supplier holds information for a single Patient ID domain, it shall provide the demographics information from that domain. In the case where the supplier holds demographics information from multiple Patient ID domains, the determination of which set of information to return must be based on the ID values for the Receiver's Device and Organization classes of the query transmission wrapper (the equivalent of MSH-5 and MSH-6 in the HL7 Version 2.5 corresponding message)

Volume II – Transactions

<This section describes new materials for Volume II of the Technical Framework to illustrate the PIX profile using HL7 version 3 messages.>

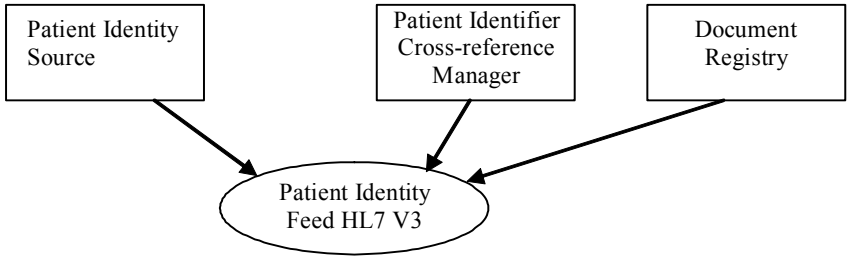
3.44 Patient Identity Feed HL7 V3

This section corresponds to Transaction ITI-44 of the IHE IT Infrastructure Technical Framework. Transaction ITI-44 is used by the Patient Identity Source, Patient Identifier Cross-reference Manager and Document Registry Actors.

3.44.1 Scope

The scope is identical to ITI TF-2: 3.8.1.

3.44.2 Use Case Roles



Actor: Patient Identity Source

Role: Provides notification to the Patient Identifier Cross-reference Manager and Document Registry for any patient identification related events including: creation, updates, merges, etc.

Corresponding HL7 v3 Application Roles:

Patient Registry Informer (PRPA_AR201301UV02)

Actor: Patient Identifier Cross-reference Manager

Role: Serves a well-defined set of Patient Identification Domains. Based on information provided in each Patient Identification Domain by a Patient Identification Source Actor, it manages the cross-referencing of patient identifiers across Patient Identification Domains.

Corresponding HL7 v3 Application Roles:

Patient Registry Tracker (PRPA_AR201302UV02)

Actor: Document Registry

Role: Uses patient identifiers provided by Patient Identity Source to ensure that XDS Documents metadata registered is associated with a known patient and updates patient identity in document metadata by tracking identity change operations (e.g. merge).

Corresponding HL7 v3 Application Roles:

Patient Registry Tracker (PRPA_AR201302UV02)

3.44.3 Referenced Standards

HL7 Version 3 Edition 2008 Patient Administration DSTU, Patient Topic (found at http://www.hl7.org/memonly/downloads/v3edition.cfm#V32008).

3.44.4 Interaction Diagrams

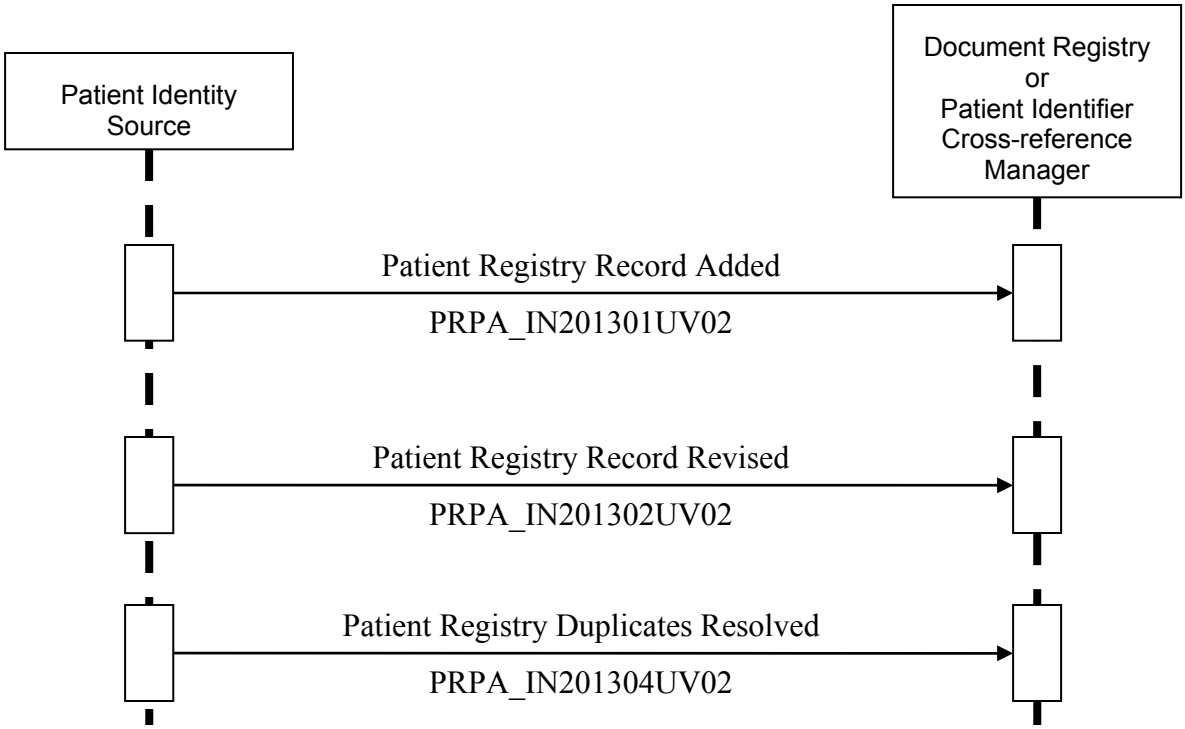


Figure 3.44-1 Patient Identity Sequence

3.44.4.1 Patient Identity Management – Add or Revise Patient Record

3.44.4.1.1 Trigger Events

The following events from a Patient Identity Source Actor will trigger one of the Add or Revise Patient Record messages:

Patient Registry Record Added (PRPA_TE201301UV02)

This trigger event signals that a new patient was added to a Patient Identity Source.

Changes to patient demographics (e.g., change in patient name, patient address, etc.) shall trigger the following Patient Registry Record Revised message:

Patient Registry Record Revised (PRPA_TE201302UV02)

This trigger event signals that patient information was revised in a Patient Identity Source.

The Patient Identifier Cross-reference Manager shall only perform cross-referencing logic on messages received from Patient Identity Source Actors. For a given Patient Identifier Domain there shall be one and only one Patient Identity Source Actor, but a given Patient Identity Source Actor may serve more than one Patient Identifier Domain.

3.44.4.1.2 Message Semantics

The Patient Identity Feed transaction is carried out by the HL7 v3 Patient Activate (PRPA_MT201301UV02) and Patient Revise (PRPA_MT201302UV02) messages, as defined in the subsequent sections. The Patient Identity Source Actor shall generate the message whenever a patient is registered or when some piece of patient demographic data changes. The components of the message listed below are required, and their detailed descriptions are provided in the following subsections.

Each message shall be acknowledged by the HL7 v3 Accept Acknowledgement (MCCI_MT000200UV01), which is described in Appendix O in this volume.

The message information model in section 3.44.4.1.2.2.describes the relevant data elements for this transaction. Specific requirements for the particular actors are found in section 3.44.4.1.3 Expected Actions.

3.44.4.1.2.1 Major Components of the Patient Registry Record Added/Revised Messages

Patient

The *Patient* class is the entry point to the R-MIMs for the *Patient Activate (PRPA_RM201301UV02)* and *Patient Revise (PRPA_RM201302UV02)* models. The patient identifiers are captured using an Instance Identifier (II) data type. Please see Appendix E for a detailed description about the use of the HL7 V3 II data type for patient identifiers.

Provider Organization

The Patient class is scoped by the provider organization where this person is a patient. The HL7 definition of the CMET requires that the provider organization needs to be identified by an id attribute, and at least one of address, telecommunications address, or contact person to be present. The id attribute SHALL have only a root, expressed as an ISO OID.

Person

The *Person* class contains identifying and demographic data elements for the focal person similar to those in the HL7 v2.x PID segment such as name, gender, date of birth, marital status and deceased indicator and time.

LanguageCommunication

Information about what language(s) should be used to communicate with the focal person can be sent in the *LanguageCommunication* class.

PersonalRelationship

This is used for sending information pertaining to the mother's maiden name.

Citizen

Citizenship information for a person, including citizen identifier and effective time can be sent in the *Citizen* class. The nation that scopes the *Citizen* role, as identified by *Nation.code*, is mandatory.

Other Identifiers

The *OtherIDs* class is used to capture other identifiers associated with the person such as a driver's license number or social security number. In this transaction the IDs assigned by the scoping provider organization are represented in the id attribute of the Patient class. All other IDs are represented in the OtherIDs class. For the purposes of interoperability where both HL7 V3 and HL7 v2.x based transactions are used, the following requirement is imposed on the OtherIDs.id attribute and on the scopingOrganization.id attribute:

OtherIDs.id.root SHALL be identical to scopingOrganization.id.root

scopingOrganization.id.extension SHALL NOT have any value

Please see section E.2 of appendix E for details on the use of the II data type for patient identifiers.

3.44.4.1.2.2 Message Information Model of the Patient Registry Record Added/Revised Messages

Below is the Message Information Model for both the Patient Activate and Patient Revise messages, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict common subset of the *Patient Activate (PRPA_RM201301UV02)* and *Patient Revise (PRPA_RM201302UV02)* RMIMs. While HL7 defines two models for the two messages, a single common subset is sufficient for the purposes of this IHE transaction.

The base RMIMs can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201301UV.htm and Edition2008/domains/uvpa/editable/PRPA_RM201302UV.htm. The following restrictions are made on the original RMIMs to arrive at the restricted model:

The focal entity choice is restricted to be only a person

The relationship holder of the personal relationship is restricted to be a person (using CMET COCT_MT030207UV)

The provider organization which is scoping the patient role is required in both the Add and Revise messages (it is optional in the original Revise message definition).

The following roles are omitted:

asPatientOfOtherProvider

birthPlace

guarantor

guardian

contactParty

asMember

careGiver

asStudent

The following participations are omitted:

subjectOf (administrativeObservation)

coveredPartyOf (coverage)

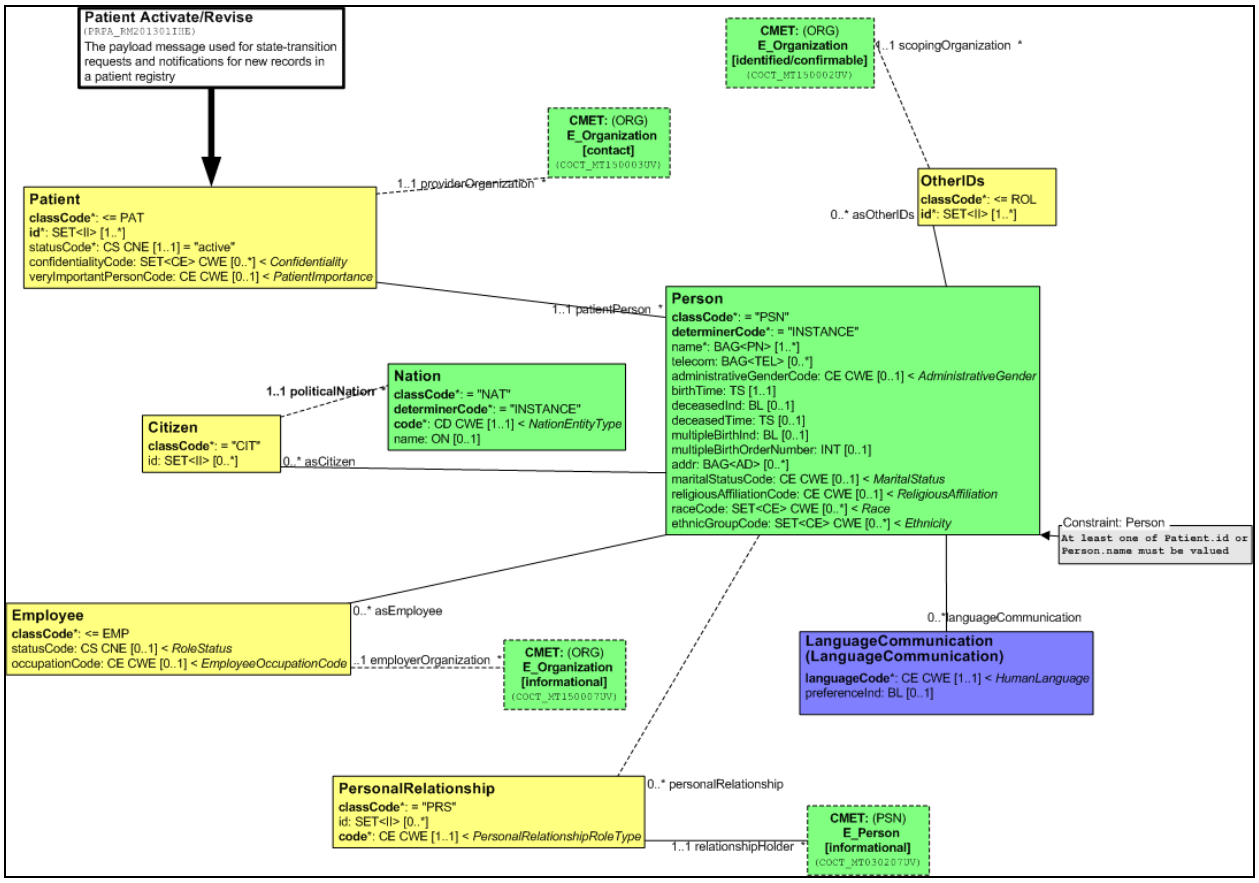


Figure 3.44.4.1.2-1

410 The attributes of this model are described in the following table. Note that CMETs are not discussed, as the HL7 definitions for them are being used.

Table 3.44.4.1.2-1

PRPA_HD201301IHE Patient Activate/Revise	This HMD extract defines the message used to report that a new patient record was added, or a patient record was updated. Derived from Figure 3.44.4.1.2-1 (PRPA_RM201301IHE)
Patient	The primary record for the focal person in a Patient Identity Source
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role
id [1..*] (M) Patient (SET<II>)	Identifiers designated by this patient identity source for the focal person
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.

PRPA_HD201301IHE Patient Activate/Revise	This HMD extract defines the message used to report that a new patient record was added, or a patient record was updated. Derived from Figure 3.44.4.1.2-1 (PRPA_RM201301IHE)
confidentialityCode [0..*] Patient (SET<CE>) {CWE:Confidentiality}	Value(s) that control the disclosure of information about this living subject as a patient
veryImportantPersonCode [0..1] Patient (CE) {CWE:PatientImportance}	A code specifying the patient's special status granted by the scoper organization, often resulting in preferred treatment and special considerations. Examples include board member, diplomat.
Person	A subtype of LivingSubject representing a human being Either Person.name or Patient.id must be non-null
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific person
name [1..*] Person (BAG<PN>)	Name(s) for this person
telecom [0..*] Person (BAG<TEL>)	Telecommunication address(es) for communicating with this person
administrativeGenderCode [0..1] Person (CE) {CWE:AdministrativeGender}	A value representing the gender (sex) of this person. Note: this attribute does not include terms related to clinical gender which is a complex physiological, genetic and sociological concept that requires multiple observations in order to be comprehensively described.
birthTime [0..1] Person (TS)	The date and time this person was born
deceasedInd [0..1] Person (BL)	An indication that this person is dead
deceasedTime [0..1] Person (TS)	The date and time this person died
multipleBirthInd [0..1] Person (BL)	An indication that this person was part of a multiple birth
multipleBirthOrderNumber [0..1] Person (INT)	The order in which this person was born if part of a multiple birth
addr [0..*] Person (BAG<AD>)	Address(es) for corresponding with this person

PRPA_HD201301IHE Patient Activate/Revise	This HMD extract defines the message used to report that a new patient record was added, or a patient record was updated. Derived from Figure 3.44.4.1.2-1 (PRPA_RM201301IHE)
maritalStatusCode [0..1] Person (CE) {CWE:MaritalStatus}	A value representing the domestic partnership status of this person
religiousAffiliationCode [0..1] Person (CE) {CWE:ReligiousAffiliation}	A value representing the primary religious preference of this person
raceCode [0..*] Person (SET<CE>) {CWE:Race}	A set of values representing the races of this person
ethnicGroupCode [0..*] Person (SET<CE>) {CWE:Ethnicity}	A set of values representing the ethnic groups of this person
OtherIDs	Used to capture additional identifiers for the person such as a Drivers' license or Social Security Number. Please see notes above in the Major Components section on the use of OtherIDs.
classCode [1..1] (M) Role (CS) {CNE:ROL}	Structural attribute. This can be any specialization of "role" except for Citizen, or Employee.
id [1..*] (M) Role (SET<II>)	One or more identifiers issued to the focal person by the associated scopingOrganization (e.g. a Driver's License number issued by a DMV)
PersonalRelationship	A personal relationship between the focal living subject and another living subject
classCode [1..1] (M) Role (CS) {CNE:PRS, fixed value= "PRS"}	Structural attribute; this is a "personal relationship" role
id [0..*] Role (SET<II>)	Identifier(s) for this personal relationship
code [1..1] (M) Role (CE) {CWE:PersonalRelationshipRoleType}	A required value specifying the type of personal relationship between the relationshipHolder and the scoping living subject drawn from the PersonalRelationshipRoleType domain, for example, spouse, parent, unrelated friend
Citizen	Used to capture person information relating to citizenship.
classCode [1..1] (M) Role (CS) {CNE:CIT, fixed value= "CIT"}	Structural attribute; this is a "citizen" role
id [0..*] Role (SET<II>)	Identifier(s) for the focal person as a citizen of a nation
Nation	A politically organized body of people bonded by territory and known as a nation.
classCode [1..1] (M)	Structural attribute; this is a 'nation' type of entity

PRPA_HD201301IHE Patient Activate/Revise	This HMD extract defines the message used to report that a new patient record was added, or a patient record was updated. Derived from Figure 3.44.4.1.2-1 (PRPA_RM201301IHE)
Organization (CS) {CNE:NAT, fixed value= "NAT"}	
determinerCode [1..1] (M) Organization (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific entity
code [1..1] (M) Organization (CD) {CWE:NationEntityType}	A value that identifies a nation state
name [0..1] Organization (ON)	A non-unique textual identifier or moniker for this nation
Employee	A relationship of the focal person with an organization to receive wages or salary. The purpose of this class is to identify the type of relationship the employee has to the employer rather than the nature of the work actually performed. For example, it can be used to capture whether the person is a Military Veteran or not..
classCode [1..1] (M) Employee (CS) {CNE:EMP}	Structural attribute; this is an "employee" role
statusCode [0..1] Employee (CS) {CNE:RoleStatus}	A value specifying the state of this employment relationship (based on the RIM Role class state-machine), for example, active, suspended, terminated.
occupationCode [0..1] Employee (CE) {CWE:EmployeeOccupationCode}	A code qualifying the classification of kind-of-work based upon a recognized industry or jurisdictional standard. OccupationCode is used to convey the person's occupation as opposed to jobClassCode (not used in this transaction) which characterizes this particular job. For example, it can be used to capture whether the person is a Military Veteran or not.
LanguageCommunication	A language communication capability of the focal person
languageCode [1..1] (M) LanguageCommunication (CE) {CWE:HumanLanguage}	A value representing a language for which the focal person has some level of proficiency for written or spoken communication. Examples: Spanish, Italian, German, English, American Sign
preferenceInd [0..1] LanguageCommunication (BL)	An indicator specifying whether or not this language is preferred by the focal person for the associated mode

3.44.4.1.2.3 Control Act and Transmission Wrappers

Please see Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.44.4.1.2-2 contains the Transmission and Control Act wrappers used for the two interactions, and the associated constraints.

Table 3.44.4.1.2-2 Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000100UV01 – Send Message Payload	MFMI_MT700701UV01 – Master File / Registry Notification Control Act, Role Subject
The value of interactionId SHALL be set to PRPA_IN201301UV02 or PRPA_IN201302UV02 The value of processingModeCode SHALL be set to T The acceptAckCode SHALL be set to AL There SHALL be only one receiver Device	The trigger event code in ControlActProcess.code SHALL be set to PRPA_TE201301UV02 or PRPA_TE201302UV02 respectively RegistrationEvent.statusCode SHALL be set to "active" There SHALL be no InReplacementOf act relationship for these interactions.

The composite message schemas which describe the full payload of these interactions, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the HL7 V3 2008 Normative Edition schemas are at Edition2008/processable/multicacheschemas/PRPA_IN201301UV02.xsd and Edition2008/processable/multicacheschemas/PRPA_IN201302UV02.xsd).

3.44.4.1.2.4 Web Services Types and Messages

The Patient Registry Record Added/Revised messages will be transmitted using Web Services, according to the requirements specified in Appendix V.

The following WSDL naming conventions SHALL apply:

```
"add" message    -> "PRPA_IN201301UV02_Message"
"revise" message -> "PRPA_IN201302UV02_Message"
acknowledgement  -> "MCCI_IN000002UV01_Message"
```

The following WSDL snippet describes the types for these messages:

```
      …
 <types>
      <xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-
org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201301UV02.xs
d"/>
<xsd:element name="PRPA_IN201301UV02"/>
</xsd:schema>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
```



```
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201302UV02.xs
d"/>
<xsd:element name="PRPA_IN201302UV02"/>
</xsd:schema>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/MCCI_IN000002UV01.xs
d"/>
<xsd:element name="MCCI_IN000002UV01"/>
</xsd:schema>
  </types>
…
```

The messages are described by the following snippet:

```
      …
<message name="PRPA_IN201301UV02_Message">
<part element="hl7:PRPA_IN201301UV02" name="Body"/>
  </message>
  <message name="PRPA_IN201302UV02_Message">
<part element="hl7:PRPA_IN201302UV02" name="Body"/>
  </message>
  <message name="MCCI_IN000002UV01_Message">
<part element="hl7:MCCI_IN000002UV01" name="Body"/>
  </message>
      …
```

The port types for the WSDL describing the Patient Identity Feed Service are described together with the expected actions of the actors which receive these messages in sections ITI TF-2: 3.44.4.1.3 and TF-2: 3.44.4.1.4.

3.44.4.1.3 Expected Actions – PIX Manager

The Patient Identifier Cross-reference Manager shall be capable of accepting attributes specified in Table 3.44.4.1.2-1 above. This is to ensure that the Patient Identifier Cross-reference Manager can handle a sufficient set of corroborating information in order to perform its cross-referencing function.

The Patient Identifier Cross-reference Manager Actor shall only recognize a single Patient Identity Source Actor per domain.

The cross-referencing process (algorithm, human decisions, etc.) is performed within the Patient Identifier Cross-reference Manager Actor, but its specification is beyond the scope of IHE.

Once the Patient Identifier Cross-reference Manager has completed its cross-referencing function, it shall make the newly cross-referenced identifiers available to PIX queries and send out notification to any Patient Identifier Cross-reference Consumers that have been configured as being interested in receiving such notifications using the PIX Update Notification HL7 V3 transaction (see Section 3.46 for the details of that transaction).

3.44.4.1.3.1 Web Services Port Type and Binding Definitions

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "PIXManager".

The following WSDL naming conventions SHALL apply:

```
wsdl:definitions/@name="PIXManager":
"add" message    -> "PRPA_IN201301UV02_Message"
"revise" message -> "PRPA_IN201302UV02_Message"
acknowledgement  -> "MCCI_IN000002UV01_Message"
portType         -> "PIXManager_PortType"
add operation    -> "PIXManager_PRPA_IN201301UV02"
revise operation -> "PIXManager_PRPA_IN201302UV02"
SOAP 1.2 binding -> "PIXManager_Binding_Soap12"
SOAP 1.2 port    -> "PIXManager_Port_Soap12"
```

The following WSDL snippets specify the Patient Identity Feed Port Type and Binding definitions, according to the requirements specified in Appendix V.

3.44.4.1.3.1.1 Port Type

```
  <portType name="PIXManager_PortType">
      <operation name="PIXManager_PRPA_IN201301UV02">
<input message="tns:PRPA_IN201301UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201301UV02"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
</operation>
<operation name="PIXManager_PRPA_IN201302UV02">
<input message="tns:PRPA_IN201302UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201302UV02"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
</operation>
  </portType>
```

3.44.4.1.3.1.2 Bindings

SOAP 1.2 binding:

```
…
  <binding name="PIXManager_Binding_Soap12" type="PIXManager_PortType">
    <wsoap12:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="PIXManager_PRPA_IN201301UV02">
      <wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201301UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
```



```
    <operation name="PIXManager_PRPA_IN201302UV02">
      <wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201302UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
  </binding>
…
```

An informative WSDL for the PIX Manager Actor implementing the PIXV3 profile is available online on the IHE FTP site, see Appendix W.

3.44.4.1.3.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.44.4.1.4 Expected Actions – Document Registry

The Document Registry shall be capable of accepting attributes in the Patient Registry Record Added or Patient Registry Record Revised messages as specified in Table 3.44.4.1.2-1. The Patient Identity Feed transaction contains more than what the XDS Document Registry needs for its operation.

The Document Registry shall store only the patient identifiers of the patient identification domain designated by the Affinity Domain for document sharing in the registry. Patient identifiers of other patient identification domains, if present in a received message, shall be ignored.

3.44.4.1.4.1 Web Services Port Type and Binding Definitions

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "DocumentRegistry".

The following WSDL naming conventions SHALL apply:

```
wsdl:definitions/@name="DocumentRegistry":
"add" message    -> "PRPA_IN201301UV02_Message"
"revise" message -> "PRPA_IN201302UV02_Message"
acknowledgement  -> "MCCI_IN000002UV01_Message"
portType         -> "DocumentRegistry_PortType"
add operation    -> "DocumentRegistry_PRPA_IN201301UV02"
revise operation -> "DocumentRegistry_PRPA_IN201302UV02"
SOAP 1.2 binding -> "DocumentRegistry_Binding_Soap12"
SOAP 1.2 port    -> "DocumentRegistry_Port_Soap12"
```

The following WSDL snippets specify the Patient Identity Feed Port Type and Binding definitions, according to the requirements specified in Appendix V.

3.44.4.1.3.1.1 Port Type

```
  <portType name="DocumentRegistry_PortType">
      <operation name="DocumentRegistry_PRPA_IN201301UV02">
<input message="tns:PRPA_IN201301UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201301UV02"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
</operation>
<operation name="DocumentRegistry_PRPA_IN201302UV02">
<input message="tns:PRPA_IN201302UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201302UV02"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
</operation>
  </portType>
```

3.44.4.1.3.1.2 Bindings

SOAP 1.2 binding:

```
…
  <binding name="DocumentRegistry_Binding_Soap12"
type="DocumentRegistry_PortType">
    <wsoap12:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="DocumentRegistry_PRPA_IN201301UV02">
<wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201301UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
    <operation name="DocumentRegistry_PRPA_IN201302UV02">
      <wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201302UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
  </binding>
…
```

An informative WSDL for the Document Registry Actor implementing the XDS.b profile is available online on the IHE FTP site, see Appendix W.

3.44.4.1.3.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.44.4.2 Patient Identity Management – Patient Identity Merge

3.44.4.2.1 Trigger Events

When two patients' records are found to identify the same patient by a Patient Identity Source Actor in a Patient Identifier Domain, the Patient Identity Source shall indicate this information using the following trigger:

Patient Registry Duplicates Resolved (PRPA_TE201304UV02)

This trigger event signals that duplicate records were resolved in a patient registry.

A Patient Registry Duplicates Resolved message indicates that the Patient Identity Source Actor has done a merge within a specific Patient Identification Domain. That is, the surviving identifier (patient ID) has subsumed a duplicate patient identifier.

3.44.4.2.2 Message Semantics

The Patient Registry Duplicates Resolved interaction is carried out by the HL7 v3 Patient Demographics message (PRPA_MT201303UV02). The message shall be generated by the system (Patient Identity Source Actor) that performs the update whenever two patient records are found to reference the same person.

The components of the HL7 Merge Patient message listed below are required, and the detailed description of the message is provided in Sections 3.44.4.2.2.1 to 3.44.4.2.2.4.

Each message shall be acknowledged by the HL7 v3 Accept Acknowledgement (MCCI_MT000200UV01), which is described in Appendix O in this volume.

When two Patient identifiers are to be merged, the subsumed identifier is referenced in the Registry Trigger Event Control Act Wrapper and the payload is sent for the surviving identifier. For example, if Patients A, B, and C are all to be merged into Patient B, then two messages are sent. In the first message Patient A's identifier is referenced in the Registry Trigger Event Control Act Wrapper via the *replacementOf* act relationship and Patients B's identifier is referenced in the *Patient* class of the payload. In the second message Patient C's identifier is referenced in the wrapper, and Patient B's identifier is, again, in the payload.

The message information model in section 3.44.4.2.2.2 describes the relevant data elements for this transaction. Specific requirements for the particular actors are found in section 3.44.4.2.3 Expected Actions.

3.44.4.2.2.1 Major Components of the Patient Registry Duplicates Resolved

Patient

The *Patient* class is the entry point to the R-MIM for the *Patient Demographics (PRPA_RM201303UV02)* in the Patient Identity Source. The patient identifier is represented using an Instance Identifier (II) data type. Please see Appendix E for a detailed description about the use of the HL7 V3 II data type for patient identifiers.

Provider Organization

The Patient class is scoped by the provider organization which is the assigning authority for the patient's identifier. For this message the provider organization class is optional. The HL7 definition of the CMET requires that the provider organization needs to be identified by an id attribute, and at least one of address, telecommunications address, or contact person to be present. The id attribute SHALL have only a root expressed as an ISO OID, and it shall match the root of the Patient.id attribute

Person

The *Person* class contains the name for the focal person (similarly to the requirement for the HL7 v2.x PID segment).

3.44.4.2.2.2 Message Information Model of the Patient Registry Duplicates Resolved Message

Below is the Message Information Model for the Duplicates Resolved message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict subset of the *Patient Demographics (PRPA_RM201303UV02)* RMIM.

The base RMIM can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201303UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model:

- The focal entity choice is restricted to be only a person
- All optional classes are removed
- All optional attributes in the Patient and Person class are removed

This restricted model makes clear the purpose of this message – it is to inform about the merge of identities in the Patient Identity Source. If there are any updates to the demographics of the patient in question, this information shall be relayed via a Patient Registry Record Revised message. This follows the semantics of the Patient Identity Feed transaction as defined in ITI TF:2-3.8, and is a restriction on the semantics of this message as defined by HL7 (where any demographics information can be updated with the Duplicates Resolved message).

The provider organization is also optionally available.

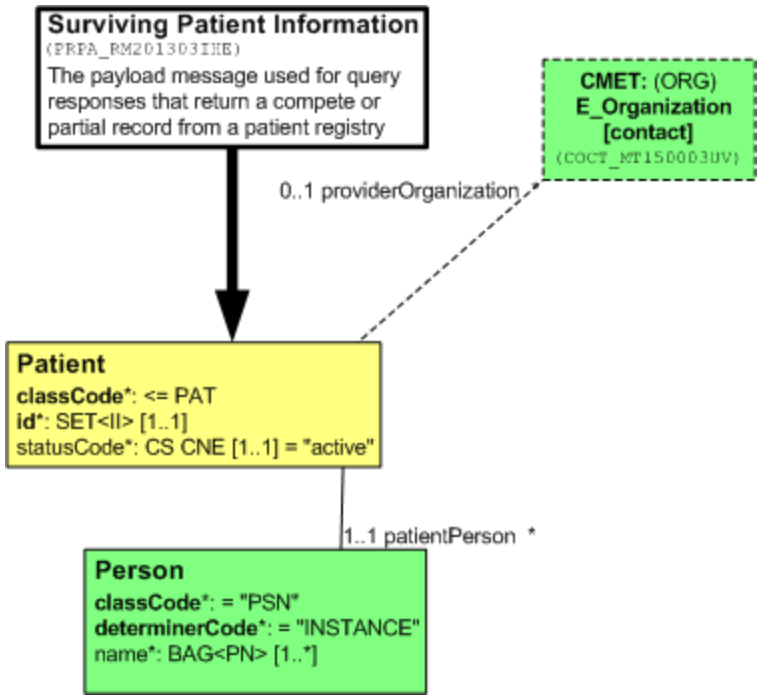


Figure 3.44.4.2.2-1

690 The attributes of this model are described in the following table.

Table 3.44.4.2.2-1

PRPA_HD201303IHE Duplicates Resolved	This HMD extract defines the message used to report that two patient identifiers were merged (i.e. a duplicate was resolved). Derived from Figure 3.44.4.2.2-1 (PRPA_RM201303IHE)
Patient	The primary record for the focal person in a Patient Identity Source
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role
id [1..*] (M) Patient (SET<II>)	Identifiers designated by various patient identity sources for the focal person
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.
Person	A subtype of LivingSubject representing a human being Both Person.name and Patient.id must be non-null
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity
determinerCode [1..1] (M)	Structural attribute; this is a specific person

PRPA_HD201303IHE Duplicates Resolved	This HMD extract defines the message used to report that two patient identifiers were merged (i.e. a duplicate was resolved). Derived from Figure 3.44.4.2.2-1 (PRPA_RM201303IHE)
Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	
name [1..*] Person (BAG<PN>)	Name(s) for this person

3.44.4.2.2.3 Control Act and Transmission Wrappers

Please see Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.44.4.1.2-2 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.44.4.2.2-3 Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000100UV01 – Send Message Payload	MFMI_MT700701UV01 – Master File / Registry Notification Control Act, Role Subject
The value of interactionId SHALL be set to PRPA_IN201304UV02 The value of processingModeCode SHALL be set to T The acceptAckCode SHALL be set to AL There SHALL be only one receiver Device	The trigger event code in ControlActProcess.code SHALL be set to PRPA_TE201304UV02 RegistrationEvent.statusCode SHALL be set to "active" There SHALL be an InReplacementOf act relationship The value of PriorRegistration.statusCode SHALL be "obsolete" There SHALL be a PriorRegisteredRole role There SHALL be a single PriorRegisteredRole.id attribute, representing the subsumed patient identifier.

The composite message schemas which describe the full payload of this interaction, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the schemas from the HL7 V3 2008 Normative Edition can be found at Edition2008/processable/multicacheschemas/PRPA_IN201304UV02.xsd).

3.44.4.2.2.4 Web Services Types and Messages

The Patient Registry Resolve Duplicates message will be transmitted using Web Services, according to the requirements specified in Appendix V.

The following WSDL naming conventions SHALL apply:

```
"resolve duplicates" message -> "PRPA_IN201304UV02_Message"
Acknowledgement              -> "MCCI_IN000002UV01_Message"
```


The following WSDL snippet describes the types for these messages:

```
        …
 <types>
        <xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-
org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201304UV02.xs
d"/>
<xsd:element name="PRPA_IN201304UV02"/>
</xsd:schema>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/MCCI_IN000002UV01.xs
d"/>
<xsd:element name="MCCI_IN000002UV01"/>
</xsd:schema>
  </types>
…
```

The messages are described by the following snippet:

```
        …
  <message name="PRPA_IN201304UV02_Message">
<part element="hl7:PRPA_IN201304UV02" name="Body"/>
  </message>
  <message name="MCCI_IN000002UV01_Message">
<part element="hl7:MCCI_IN000002UV01" name="Body"/>
  </message>
        …
```

The port types for the WSDL describing the Resolved Duplicates Service are described together with the expected actions of the actors which receive these messages in sections ITI TF-2: 3.44.4.2.3 and TF-2: 3.44.4.2.4.

3.44.4.2.3 Expected Actions – PIX Manager

The Patient Identifier Cross-reference Manager shall be capable of accepting attributes in the Resolve Duplicates message as specified in Table 3.44.4.2.2-1.

The Patient Identifier Cross-reference Manager shall perform the Expected Actions similar to the ones specified in Section 3.8.4.2.3. The particular behavior is described below.

When the Patient Identifier Cross-reference Manager receives the Resolve Duplicates message type of the Patient Identity Feed transaction, it shall cross-reference the patient identifiers provided in the wrapper and the payload of the message by replacing any references it is maintaining internally to the patient ID provided in the wrapper by the patient ID included in the payload. After the identifier references are replaced, the Patient Identifier Cross-reference

Manager shall reapply its internal cross-referencing logic/ policies before providing the updated information via either the PIX Query or PIX Notification Transactions.

3.44.4.2.3.1 Web Services Port Type and Binding Definitions

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "PIXManager".

The following WSDL naming conventions SHALL apply:

```
wsdl:definitions/@name="PIXManager":
"merge" message  -> "PRPA_IN201304UV02_Message"
acknowledgement  -> "MCCI_IN000002UV01_Message"
portType         -> "PIXManager_PortType"
merge operation  -> "PIXManager_PRPA_IN201304UV02"
SOAP 1.2 binding -> "PIXManager_Binding_Soap12"
SOAP 1.2 port    -> "PIXManager_Port_Soap12"
```

The following WSDL snippets specify the Patient Identity Feed Port Type and Binding definitions, according to the requirements specified in Appendix V.

3.44.4.2.3.1.1 Port Type

```
  <portType name="PIXManager_PortType">
      <operation name="PIXManager_PRPA_IN201304UV02">
<input message="tns:PRPA_IN201304UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201304UV02"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
</operation>
  </portType>
```

3.44.4.2.3.1.2 Bindings

SOAP 1.2 binding:

```
…
  <binding name="PIXManager_Binding_Soap12" type="PIXManager_PortType">
    <wsoap12:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="PIXManager_PRPA_IN201304UV02">
      <wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201304UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
  </binding>
…
```


An informative WSDL for the PIX Manager Actor implementing the PIXV3 profile is available online on the IHE FTP site, see Appendix W.

3.44.4.2.3.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.44.4.2.4 Expected Actions – Document Registry

The Document Registry shall be capable of accepting attributes in the Resolve Duplicates message as specified in Table 3.44.4.2.2.2-1. Other attributes may exist, but the Document Registry shall ignore them.

The Document Registry shall perform the Expected Actions similar to the ones specified in Section 3.8.4.2.4. The particular behavior is described below.

When the Document Registry receives the Resolve Duplicates message of the Patient Identity Feed transaction, it shall merge the patient identity specified in the PriorRegistrationRole.id attribute of the Control-Act wrapper (subsumed patient identifier) into the patient identity specified in Patient.id attribute of the message payload (surviving patient identifier) in its registry. After the merge, all Document Submission Sets (including all Documents and Folders beneath them) under the secondary patient identity before the merge shall point to the primary patient identity. The secondary patient identity shall no longer be referenced in the future services provided by the Document Registry.

Changes resulting from a Resolve Duplicates message are not reversible. No un-resolve message is supported by this transaction.

See section 3.18.4.1.2.3.8.1 of the Technical Framework for details of how this message type affects results of a Stored Query transaction and the end of section 3.14.4.1.2.12 to see how it affects the Register transaction.

A Resolve Duplicates message contains two attributes of interest:

- PriorRegistrationRole.id – subsumed patient identifier: the patient identifier which is to become obsolete
- Patient.id – surviving patient identifier: the patient identifier which is to remain active.

After a duplicate resolution, the Patient.id attribute represents all records formerly represented by either the Patient.id attribute or the PriorRegistrationRole.id attribute. All other attributes may be ignored.

The following conditions shall be detected by the Document Registry actor. Messages containing these conditions shall not update the state of the Document Registry actor.

- The subsumed patient identifier is not issued by the correct Assigning Authority according to the Affinity Domain configuration.

- The surviving patient identifier is not issued by the correct Assigning Authority according to the Affinity Domain configuration.
- The subsumed and surviving patient identifiers are the same.
- The subsumed patient identifier has already been subsumed by an earlier message.
- The surviving patient identifier has already been subsumed by and earlier message.
- The subsumed patient identifier does not convey a currently active patient identifier known to the Registry actor.

If none of the above conditions occur then the Document Registry actor shall perform the following duties:

1. Records the merge. Only the subsumed and surviving patient identifiers need be remembered. A patient identifier merge affects the processing of future Register Document Set [ITI-14] transactions. See section 3.14.4.1.2.12 XDS Registry Adaptor for details.
2. Multiple merge transactions can form a recorded merge chain, where the Subsumed identifier of the current merge is the Surviving identifier of a previous merge.
3. Register Document Set transactions referencing a subsumed identifier are rejected with an `XDSUnknownPatientId` error.
4. Stored Query transactions referencing a subsumed identifier return no content.
5. Stored Query transactions referencing a surviving identifier successfully match the entire recorded merge chain and return appropriate metadata.
6. No change in the Registry Query transaction.

Note: This transaction does not specify how the merge is to be implemented. It may or may not change the stored form of the metadata. It only specifies the observable results from the perspective of the Registry Stored Query transaction [ITI-18] and the Register Document Set transaction [ITI-14].

3.44.4.2.4.1 Web Services Port Type and Binding Definitions

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "DocumentRegistry".

The following WSDL naming conventions SHALL apply:

```
wsdl:definitions/@name="DocumentRegistry":
"resolve duplicates" message  -> "PRPA_IN201304UV02_Message"
acknowledgement               -> "MCCI_IN000002UV01_Message"
portType                      -> "DocumentRegistry_PortType"
resolve duplicates operation  -> "DocumentRegistry_PRPA_IN201304UV02"
SOAP 1.2 binding              -> "DocumentRegistry_Binding_Soap12"
SOAP 1.2 port                 -> "DocumentRegistry_Port_Soap12"
```

The following WSDL snippets specify the Patient Identity Feed Port Type and Binding definitions, according to the requirements specified in Appendix V.

3.44.4.2.4.1.1 Port Type

```
  <portType name="DocumentRegistry_PortType">
      <operation name="DocumentRegistry_PRPA_IN201304UV02">
<input message="tns:PRPA_IN201304UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201304UV02"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
</operation>
  </portType>
```

3.44.4.2.4.1.2 Bindings

SOAP 1.2 binding:

```
…
  <binding name="DocumentRegistry_Binding_Soap12"
type="DocumentRegistry_PortType">
    <wsoap12:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="DocumentRegistry_PRPA_IN201304UV02">
<wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201304UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
  </binding>
…
```

An informative WSDL for the Document Registry Actor implementing the XDS.b profile is available online on the IHE FTP site, see Appendix W.

3.44.4.2.4.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.44.5 Security Requirements

This transaction is generally used in profiles that require actors to be grouped with a Secure Node Actor as defined in the IHE Audit Trail and Node Authentication Integration profile. This use of the ATNA profile in an XDS Affinity Domain does not require a centralized XDS Affinity Domain Audit Repository Actor.

The use of ATNA along with XDS does require that each member of the XDS Affinity Domain have audit and security mechanisms in place. See ITI TF-1: Appendix G and ITI-TF-2: Appendix K.

The individual actors involved are often members of different secure domains. The data transfers between different secure domains need different protection than transfers within a secure domain and shall be encrypted with TLS authentication of both hosts.

Transfers within a single secure domain may choose to omit encryption if it is unnecessary, so it is recommended that the online transfer security mechanisms be configurable. Certificate management and exchange is defined as part of the XDS Affinity Domain business relationships and no IHE Integration Profile is specified at this time, see ITI TF-1: Appendix L.

Each transaction will result in audit records describing the transaction. Each secure domain has its own audit server to capture the records for the actors that are within that domain. Access to audit records by other enterprises within the XDS Affinity Domain is managed and controlled by the business relationship terms of the XDS Affinity Domain. There is no automatic IHE transaction for such access.

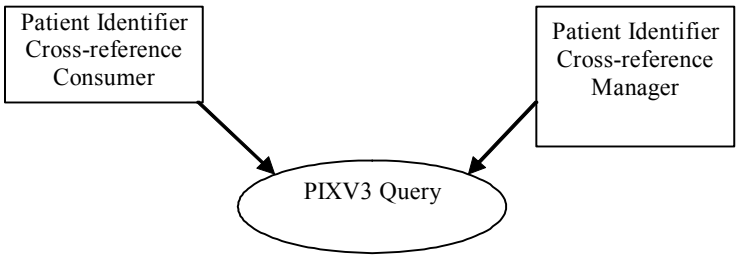
3.45 PIXV3 Query

This section corresponds to Transaction ITI-45 of the IHE IT Infrastructure Technical Framework. Transaction ITI-45 is used by the Patient Identifier Cross-reference Consumer and Patient Identifier Cross-reference Manager actors.

3.45.1 Scope

The scope is identical to ITI TF-2: 3.9.1, PIX Query Scope.

3.45.2 Use Case Roles



Actor: Patient Identifier Cross-reference Consumer

Role: Queries the Patient Identifier Cross-reference Manager for a list of corresponding patient identifiers, if any

Corresponding HL7 v3 Application Roles:

Patient Registry Query Placer (PRPA_AR201303UV02)

Actor: Patient Identifier Cross-reference Manager

Role: Manages the cross-referencing of patient identifiers across Patient Identification Domains. Upon request it returns a list of corresponding patient identifiers, if any.

Corresponding HL7 v3 Application Roles:

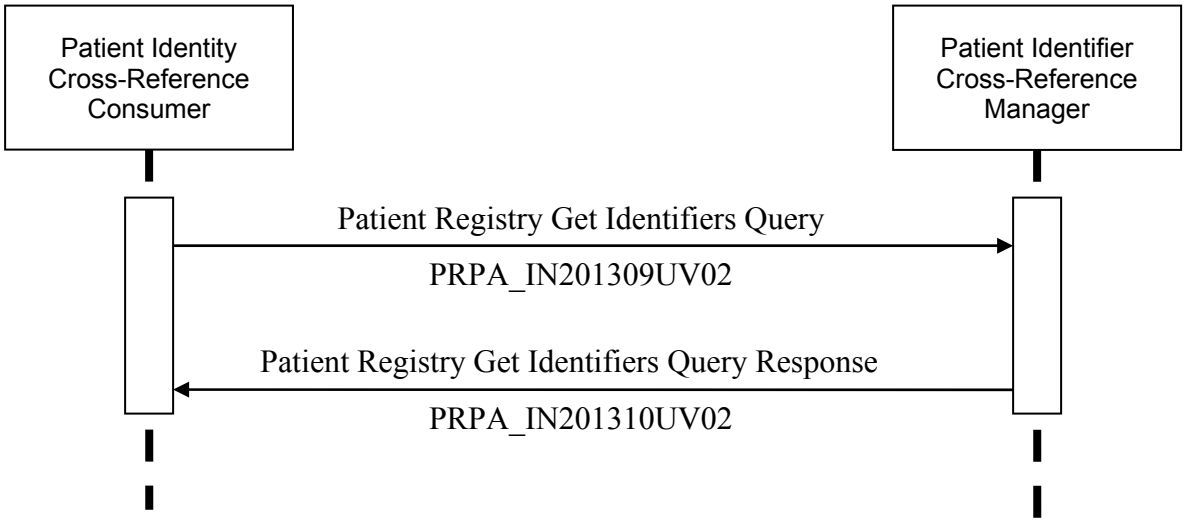
Patient Registry Query Fulfiller (PRPA_AR201304UV02)

3.45.3 Referenced Standards

HL7 Version 3 Edition 2008 Patient Administration DSTU, Patient Topic (found at http://www.hl7.org/memonly/downloads/v3edition.cfm#V32008)

Implementers of this transaction shall comply with all requirements described in ITI TF-2:Appendix V Web Services for IHE Transactions.

3.45.4 Interaction Diagrams



3.9B-1 Get Corresponding Identifiers Sequence

3.45.4.1 Get Corresponding Identifiers

3.45.4.1.1 Trigger Events

A Patient Identifier Cross-reference Consumer's need to get the patient identifier associated with a domain for which it needs patient related information will trigger the request for corresponding patient identifiers message based on the following HL7 trigger event:

Patient Registry Get Identifiers Query (PRPA_TE201309UV02)

This query requests all other identifiers associated with a particular person identifier.

3.45.4.1.2 Message Semantics

The Get Corresponding Identifiers transaction is initiated by the HL7 Patient Registry Query by Identifier (PRPA_MT201307UV02) message. The Patient Identifier Cross-reference Consumer

Actor shall generate the query message whenever it needs to obtain corresponding patient identifier(s) from other Patient Identification Domain(s). The components of the message listed below are required, and their detailed descriptions are provided in the following subsections.

The receiver shall respond to the query by sending the Patient Identifiers message (PRPA_MT201304UV02), which uses the Application Level Acknowledgement transmission wrapper. This satisfies the requirements of original mode acknowledgment; no intermediate Accept Acknowledgement message is to be sent. All appropriate identifiers shall be returned in a single response; therefore no continuation queries are allowed in this transaction.

3.45.4.1.2.1 Major Components of the Patient Registry Query by Identifier

PatientIdentifier Parameter

This required parameter specifies the identifier associated with the person whose information is being queried. For this parameter item, a single patient identifier is specified in the PatientIdentifier.value attribute. Please see Appendix E for the use of the II data type for patient identifiers.

DataSource Parameter

This optional parameter specifies the assigning authority/authorities of the Patient Identity Domain(s) whose identifiers need to be returned. If no such parameter is supplied, the PIX Manager is required to return the identifiers from all known Patient Identity Domains.

3.45.4.1.2.2 Message Information Model of the Patient Registry Query by Identifier Message

Below is the Message Information Model for the Query by Identifier message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict subset of the *Patient Registry Query by Identifier (PRPA_RM201307UV02) RMIM.*

The base RMIM can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201307UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model:

Exactly one PatientIdentifier parameter SHALL be present

Exactly one PatientIdentifier.value attribute SHALL be present

If one or more DataSource parameters are present, each SHALL contain exactly one DataSource.value parameter

The optional attributes ParameterList.id, QueryByParameter responseElementGroupId, QueryByParameter.modifyCode, and QueryByParameter.executionAndDeliveryTime were removed from the model

QueryByParameter.responsePriorityCode is required and is fixed to I (Immediate)

QueryByParameter.statusCode is defaulted to "new".

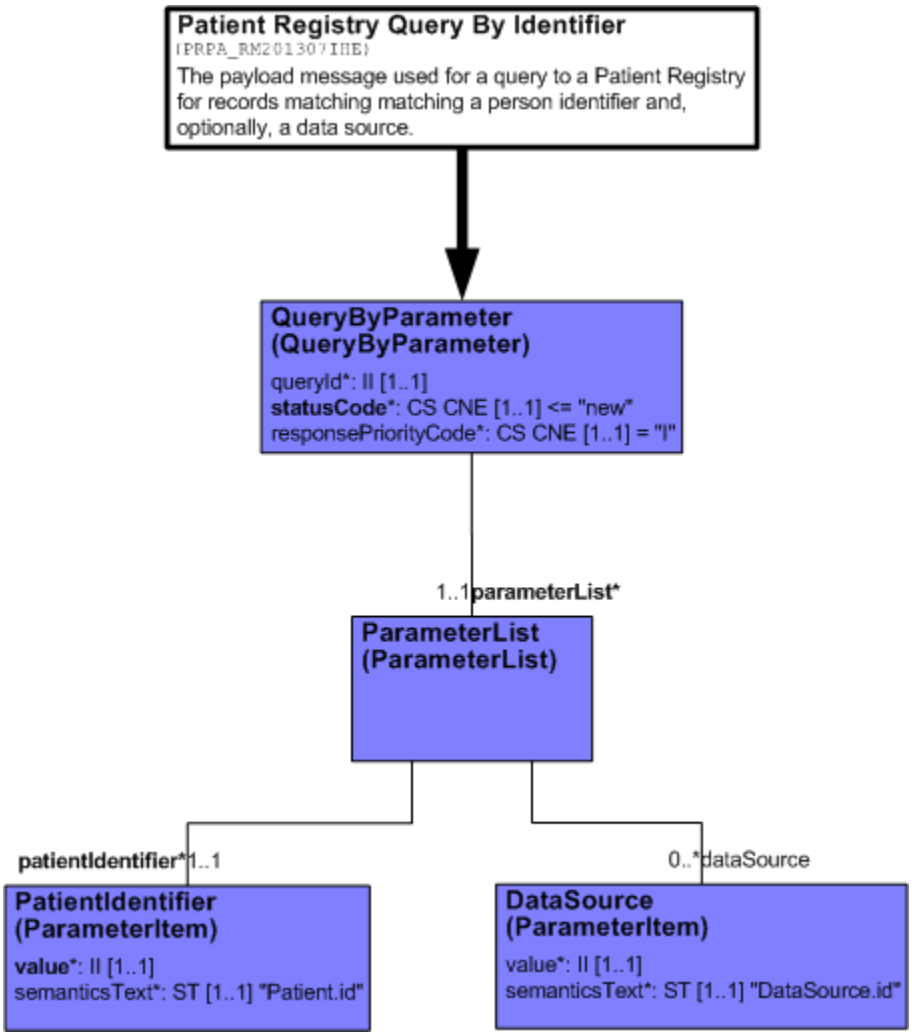


Figure 3.45.4.1.2-1

995 The attributes of this model are described in the following table.

Table 3.45.4.1.2-2

PRPA_HD201307IHE Patient Registry Query by Identifier	This HMD extract defines the message used to query a patient registry for a list of identifiers. Derived from Figure 3.45.4.1.2-1 (PRPA_RM201307IHE)
QueryByParameter	The entry point for the domain content in this query
queryId [1..1] QueryByParameter (II)	Unique identifier for the query

PRPA_HD201307IHE Patient Registry Query by Identifier	This HMD extract defines the message used to query a patient registry for a list of identifiers. Derived from Figure 3.45.4.1.2-1 (PRPA_RM201307IHE)
statusCode [1..1] (M) QueryByParameter (CS) {CNE:QueryStatusCode, fixed value="new"}	There are no continuations necessary for this type of query, so the status is always "new"
responsePriorityCode [1..1] QueryByParameter (CS) {CNE:QueryPriority, fixed value="I"}	The PIX manager is required to send an immediate response.
DataSource	Optional parameter specifying the assigning authority of a Patient Identity Domain
value [1..1] ParameterItem (II)	The identifier for the Patient Identity Domain's assigning authority. IHE restriction: The value.root attribute SHALL be a valid ISO OID The value.extension attribute SHALL NOT be present
semanticsText [1..1] ParameterItem (ST){default= "DataSource.id"}	
PatientIdentifier	
value [1..1] (M) ParameterItem (II)	The patient identifier known to the PIX Consumer
semanticsText [1..1] ParameterItem (ST){default= "Patient.id"}	

The Patient Identifier Cross-reference Consumer Actor shall provide the patient identifier in the PatientIdentifier.value attribute according to the rules specified in Appendix E.

If the requesting system wishes to select the Patient Identity Domains from which patient identifiers are returned, it does so by sending as many DataSource parameters as domains for which it wants to receive patient identifiers. Each instance of the DataSource parameter shall provide the Assigning Authority identifier for a specific domain using the DataSource.value attribute. Note that the DataSource.value.extension attribute shall not be provided, and the DataSource.value.root attribute shall contain a valid ISO OID. The responding system shall return the Patient.id value for each requested domain, if a value is known. Note that the value of Patient.id.root attribute shall match the DataSource.value.root attribute representing the corresponding Assigning Authority.

If no DataSource parameter is specified the Patient Identifier Cross-reference Manager Actor shall return patient identifiers for all domains for which it possesses a corresponding identifier (subject to local publication restrictions).

3.45.4.1.2.3 Control Act and Transmission Wrappers

Please see Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.44.4.1.2-2 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.45.4.1.2-4 Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000100UV01 – Send Message Payload	QUQI_MT021001UV01 – Query Control Act Request: Query By Parameter
The value of interactionId SHALL be set to PRPA_IN201309UV02 The value of processingModeCode SHALL be set to T The acceptAckCode SHALL be set to AL There SHALL be only one receiver Device	The value of ControlActProcess.moodCode SHALL be set to RQO The trigger event code in ControlActProcess.code SHALL be set to PRPA_TE201309UV02 The value of authroOrPerformer.typeCode SHALL be set to AUT

The composite message schemas which describe the full payload of this interaction, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the schemas from the HL7 V3 2008 Normative Edition are at Edition2008/processable/multicacheschemas/PRPA_IN201309UV02.xsd).

3.45.4.1.2.4 Web Services Types and Messages

The Patient Registry Query by Identifier message and response will be transmitted using Web Services, according to the requirements specified in Appendix V.

The following WSDL naming conventions SHALL apply:

```
      Query by Identifier -> "PRPA_IN201309UV02_Message"
      Query Response      -> "PRPA_IN201310UV02_Message"
```

The following WSDL snippet describes the types for these messages:

```
      …
 <types>
      <xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-
org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201309UV02.xs
d"/>
<xsd:element name="PRPA_IN201309UV02"/>
</xsd:schema>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201310UV02.xs
d"/>
```



```
<xsd:element name="PRPA_IN201310UV02"/>
</xsd:schema>
  </types>
…
```

The messages are described by the following snippet:

```
      …
  <message name="PRPA_IN201309UV02_Message">
<part element="hl7:PRPA_IN201309UV02" name="Body"/>
  </message>
  <message name="PRPA_IN201310UV02_Message">
<part element="hl7:PRPA_IN201310UV02" name="Body"/>
  </message>
```

The port types for the WSDL describing the Resolved Duplicates Service are described together with the expected actions of the actors which receive these messages in sections ITI TF-2: 3.45.4.1.3.

3.45.4.1.3 Expected Actions

The Patient Identifier Cross-reference Manager shall be capable of accepting attributes as specified in Table 3.45.4.1.2-1 above.

The Patient Identifier Cross-reference Manager Actor shall be capable of accepting multiple concurrent PIX Query requests (Get Corresponding Identifiers messages) and responding correctly using the Return Corresponding Identifiers message.

3.45.4.1.3.1 Web Services Port Type and Binding Definitions

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "PIXManager".

The following WSDL naming conventions SHALL apply:

```
wsdl:definitions/@name="PIXManager":
"get identifiers" query    -> "PRPA_IN201309UV02_Message"
"get identifiers" response -> "PRPA_IN201310UV02_Message"
portType                   -> "PIXManager_PortType"
get identifiers operation  -> "PIXManager_PRPA_IN201309UV02"
SOAP 1.2 binding           -> "PIXManager_Binding_Soap12"
SOAP 1.2 port              -> "PIXManager_Port_Soap12"
```

The following WSDL snippets specify the PIXV3 Query Port Type and Binding definitions, according to the requirements specified in Appendix V.

3.45.4.1.3.1.1 Port Type

```
  <portType name="PIXManager_PortType">
      <operation name="PIXManager_PRPA_IN201309UV02">
<input message="tns:PRPA_IN201309UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201309UV02"/>
```



```
<output message="tns:PRPA_IN201310UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201310UV02"/>
</operation>
  </portType>
```

3.45.4.1.3.1.2 Bindings

SOAP 1.2 binding:

```
…
  <binding name="PIXManager_Binding_Soap12" type="PIXManager_PortType">
    <wsoap12:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="PIXManager_PRPA_IN201309UV02">
      <wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201309UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
  </binding>
…
```

An informative WSDL for the PIX Manager Actor implementing the PIXV3 profile is available online on the IHE FTP site, see Appendix W.

3.45.4.1.3.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.45.4.2 Return Corresponding Identifiers

3.45.4.2.1 Trigger Events

The Patient Identifier Cross-reference Manager's response to the Get Corresponding Identifiers message will trigger the following message:

Patient Registry Get Identifiers Query Response (PRPA_TE201310UV02)

This query response returns all other identifiers associated with a particular person identifier.

3.45.4.2.2 Message Semantics

The Return Corresponding Identifiers message is conducted by the HL7 Patient Identifiers message. The Patient Identifier Cross-reference Manager Actor shall generate this message in direct response to the Patient Registry Query by Identifier message previously received. This message satisfies the Application Level, Original Mode Acknowledgement for the query message.

3.45.4.2.2.1 Major Components of the Get Corresponding Identifiers Query Response

Patient

The *Patient* class is the entry point to the R-MIM for the *Patient Identifiers (PRPA_RM201304UV02)*. This is where at least one of the requested patient IDs will be listed.

Person

The *Person* class contains the name of the patient for additional verification purposes.

Provider Organization

The Patient class is optionally scoped by the provider organization where this person is a patient. The HL7 definition of the CMET requires that the provider organization needs to be identified by an id attribute, and at least one of address, telecommunications address, or contact person to be present. The id attribute SHALL have only a root, expressed as an ISO OID, and at least one of the id attributes of the Patient class SHALL have a matching root component. (see appendix E on the use of the II data type for patient identifiers).

Other Identifiers

The *OtherIDs* class can optionally used to capture other identifiers associated with the person such as a driver's license number or social security number. It is important to recognize that the HL7 RIM distinguishes between person-level IDs and patient-level IDs. In this transaction, however, the Patient Identity Cross-Reference Manager has the option to send all identifiers in the id attributes of the Patient class. If that is the case, the OtherIDs class shall not be used. For the purposes of interoperability where both HL7 V3 and HL7 v2.x based transactions are used, and the OtherIDs class is present, the following requirement is imposed on the OtherIDs.id attribute and on the scopingOrganization.id attribute:

OtherIDs.id.root SHALL be identical to scopingOrganization.id.root

scopingOrganization.id.extension SHALL NOT have any value

3.45.4.2.2.2 Message Information Model of the Patient Identifiers Message

Below is the Message Information Model for the Patient Identifiers message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict subset of the *Patient Identifiers (PRPA_RM201304UV02)* RMIM.

The base RMIM can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201304UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model:

- The focal entity choice is restricted to be only a person
- All optional classes are removed, except for the provider organization, and other identifiers
- All optional attributes in the Patient and Person class are removed

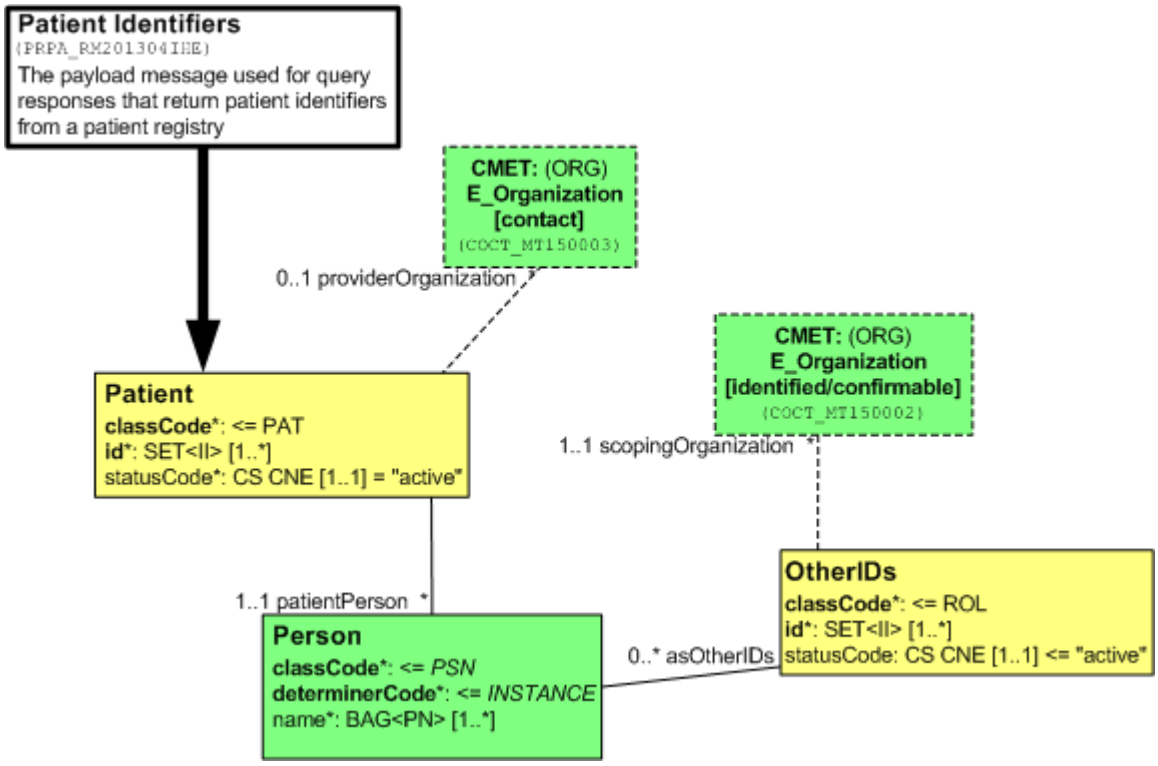


Figure 3.45.4.2.2-1

1160 The attributes of this model are described in the following table.

Table 3.45.4.2.2-3

PRPA_HD201304IHE PatientIdentifiers	This HMD extract defines the message used to respond to the Patient Registry Query By Identifier Derived from Figure 3.45.4.2.2-1 (PRPA_RM201304IHE)
Patient	The primary record for the focal person in a Patient Identity Cross-Reference Manager
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role
id [1..*] (M) Patient (SET<II>)	Linked patient identifiers from one or more Patient Identity Domains
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.
Person	A subtype of LivingSubject representing a human being Both Person.name and Patient.id must be non-null
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity

PRPA_HD201304IHE PatientIdentifiers	This HMD extract defines the message used to respond to the Patient Registry Query By Identifier Derived from Figure 3.45.4.2.2-1 (PRPA_RM201304IHE)
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific person
name [1..*] Person (BAG<PN>)	Name(s) for this person
OtherIDs	Used to capture additional identifiers for the person such as a Drivers' license or Social Security Number.
classCode [1..1] (M) Role (CS) {CNE:ROL}	Structural attribute. This can be any specialization of "role"
id [1..*] (M) Role (SET<II>)	One or more identifiers issued to the focal person by the associated scopingOrganization (e.g. a Driver's License number issued by a DMV)

3.45.4.2.2.3 Control Act and Transmission Wrappers

Please see Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.44.4.1.2-2 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.45.4.4.2-5 Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000300UV01 – Send Application Acknowledgement	MFMI_MT700711UV01 – Master File/Registry Query Response Control Act (Role Subject)
The value of interactionId SHALL be set to PRPA_IN201310UV02 The value of processingModeCode SHALL be set to T The acceptAckCode SHALL be set to NE There SHALL be only one receiver Device	The value of ControlActProcess.moodCode SHALL be set to EVN The trigger event code in ControlActProcess.code SHALL be set to PRPA_TE201310UV02 There SHALL be zero or one RegistrationEvents present in this message. If a RegistrationEvent is part of the message, there SHALL be exactly one Patient role present in the payload. There SHALL be no replacementOf act-relationship present in this message There SHALL be a QueryByParameter copy of the original query.

The composite message schemas which describe the full payload of this interaction, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the schema from the HL7 V3 2008 Normative Edition are at Edition2008/processable/multicacheschemas/PRPA_IN201310UV02.xsd).

3.45.4.2.2.4 Web Services Types and Messages

Since this is a response to a query, please see section 3.45.4.1.2.4 for the web services components of this message.

3.45.4.2.3 Expected Actions - Patient Identifier Cross-reference Manager Actor

The Patient Identifier Cross-reference Manager Actor shall return the attributes within the message that are required by the HL7 standard, as shown in figure 3.45.4.2.2-1.

A RegistrationEvent, and the associated Patient class are returned only when the Patient Identifier Cross-reference Manager Actor recognizes the specified Patient ID in the query parameter, and an identifier exists for the specified patient in at least one other domain. The Patient Identifier Cross-reference Manager Actor shall use at one or more Patient.id attributes (and, optionally, zero or more OtherIDs.id attributes) to convey the patient IDs which uniquely identify the patient within each Patient Identification Domain. The identifiers are captured using an Instance Identifier (II) data type. See Appendix E for a detailed description of the use of the II data type for patient identifiers.

It is wholly the responsibility of the Patient Identifier Cross-reference Manager Actor to perform the matching of patient identifiers based on the patient identifier it receives. The information provided by the Patient Identifier Cross-reference Manager Actor to the Patient Identifier Cross-reference Consumer Actors is a list of cross-referenced identifiers in one or more of the domains managed by the cross-referencing Actor, in addition to the original identifier used in the query. The identifier used in the query is returned only in the copy of the QueryByParameter parameter list. The list of cross-references is not made available until the set of policies and processes for managing the cross-reference function have been completed. The policies of administering identities adopted by the cooperating domains are completely internal to the Patient Identifier Cross-reference Manager Actor and are outside of the scope of this framework. Possible matches should not be communicated until the healthcare institution policies and processes embodied in the Patient Identifier Cross-reference Manager Actor reach a positive matching decision.

The Patient Identifier Cross-reference Manager Actor shall respond to the query request as described by the following 6 cases:

Case 1: The Patient Identifier Cross-reference Manager Actor recognizes the specified Patient ID sent by the Patient Identifier Cross-reference Consumer in PatientIdentifier.value, and corresponding identifiers exist for the specified patient in at least one of the domains requested in DataSource.value (one identifier per domain). (See Case 6 below for the required behavior if there are multiple identifiers recognized within a given Identifier Domain by the Patient Identifier Cross-reference Manager Actor.)

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

OK (data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper).

A single RegistrationEvent class is returned, where at least one of the identifiers, which the Patient Identifier Cross-reference Manager Actor did recognize as belonging to a requested

domain, is returned in Patient.id. Subsequent such identifiers, if any, are returned in either Patient.id or OtherIDs.id, not including the queried-for patient identifier that is returned in the QueryByParameter parameter list (control act wrapper).

Case 2: The Patient Identifier Cross-reference Manager Actor recognizes the specified Patient ID sent by the Patient Identifier Cross-reference Consumer in PatientIdentifier.value, there are no specific domains requested in the query (no DataSource parameters are present), and corresponding identifiers exist for the specified patient in at least one other domain known to the Patient Identifier Cross-reference Manager Actor (one identifier per domain).

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

OK (data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper).

A single RegistrationEvent class is returned, where at least one of the identifiers, which the Patient Identifier Cross-reference Manager Actor did recognize as belonging to a domain different from the domain of the queried-for patient identifier, is returned in Patient.id. Subsequent such identifiers, if any, are returned in either Patient.id or OtherIDs.id, not including the queried-for patient identifier, which is returned in the QueryByParameter parameter list (control act wrapper).

Case 3: The Patient Identifier Cross-reference Manager Actor recognizes the specified Patient ID sent in PatientIdentifier.value, but no identifier exists for that patient in any of the domains sent in DataSource.value.

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

NF (no data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper).

No RegistrationEvent is returned.

The queried-for patient identifier is returned in the QueryByParameter parameter list (control act wrapper).

Case 4: The Patient Identifier Cross-reference Manager Actor does not recognize the Patient ID sent in the PatientIdentifier.value.

AE (application error) is returned in Acknowledgement.typeCode (transmission wrapper) and in QueryAck.queryResponseCode (control act wrapper).

No RegistrationEvent is returned.

The queried-for patient identifier is returned in the QueryByParameter parameter list (control act wrapper).

An AcknowledgmentDetail class is returned in which the attributes typeCode, code, and location are valued as follows.

Attribute	VALUE

Attribute	VALUE
typeCode	E
code	204 (Unknown Key Identifier)
location	XPath expression for the value element of the PatientIdentifier parameter

Case 5: The Patient Identifier Cross-reference Manager Actor does not recognize one or more of the Patient Identification Domains for which an identifier has been requested.

AE (application error) is returned in Acknowledgement.typeCode (transmission wrapper) and in QueryAck.queryResponseCode (control act wrapper).

No RegistrationEvent is returned.

The queried-for patient identification domains are returned in the QueryByParameter parameter list (control act wrapper).

For each domain that was not recognized, an AcknowledgmentDetail class is returned in which the attributes typeCode, code, and location are valued as follows:

Attribute	VALUE
typeCode	E
Code	204 (Unknown Key Identifier)
Location	XPath expression for the value element of the DataSource parameter (which includes the repetition number of the parameter)

Case 6: The Patient Identifier Cross-reference Manager Actor recognizes the specified Patient ID sent by the Patient Identifier Cross-reference Consumer in PatientIdentifier.value, and corresponding identifiers exist for the specified patient in at least one of the domains requested in DataSource.value, and there are multiple identifiers within at least one of the requested domains.

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

OK (data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper)

A single RegistrationEvent class is returned, where at least one of the identifiers, which the Patient Identifier Cross-reference Manager Actor did recognize as belonging to a requested domain, is returned in Patient.id. Subsequent such identifiers, if any, are returned in either Patient.id or OtherIDs.id, not including the queried-for patient identifier that is returned in the QueryByParameter parameter list (control act wrapper).

If the Patient Identifier Cross-reference Manager Actor chooses to return multiple identifiers associated with the same domain, it shall return these identifiers either grouped in a single instance of the OtherIDs class, or all represented via repetitions of the Patient.id attribute.

3.45.4.2.3.1 Web Services Port Type and Binding Definitions

The WSDL snippets for this message are shown in 3.45.4.1.3.1

3.45.4.2.3.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.45.4.2.4 Expected Actions - Patient Identifier Cross-reference Consumer Actor

The Patient Identifier Cross-reference Consumer will use the list of patient identifier aliases provided by the Patient Identifier Cross-reference Manger to perform the functions, for which it requested the list. The identifiers found in both Patient.id and OtherIDs.id attributes shall be considered together to form a complete list of patient identifiers from the different Patient Identity domains (either requested or available).

In the case where the returned list of identifiers contains multiple identifiers for a single domain, the Patient Identifier Cross-reference Consumer shall either use ALL of the multiple identifiers from the given domain or it shall ignore ALL of the multiple identifiers from the given domain.

This allows Patient Identifier Cross-reference Consumer Actors capable of handling multiple identities for a single patient within a single domain (i.e., those that can correctly aggregate the information associated with the different identifiers) to do so. For those Patient Identifier Cross-reference Consumer Actors not capable of handling this situation, ignoring the entire list of different identifiers prevents the consumer from presenting incomplete data.

3.45.5 Security Requirements

The relevant security requirements are discussed in the Patient Identity Feed HL7 V3 transaction (see ITI TF-2: 3.44.5)

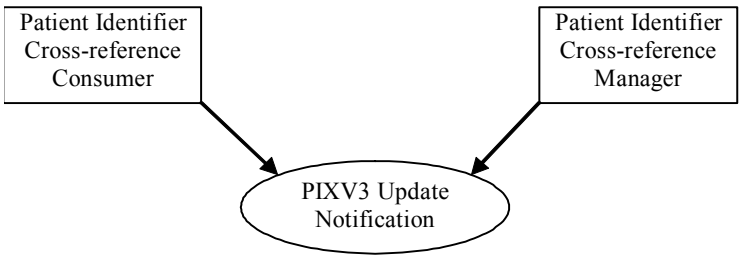
3.46 PIXV3 Update Notification

This section corresponds to Transaction ITI-46 of the IHE IT Infrastructure Technical Framework. Transaction ITI-46 is used by the Patient Identifier Cross-reference Consumer and Patient Identifier Cross-reference Manager actors.

3.46.1 Scope

The scope is identical to the scope of transaction ITI-10, described in section 3.10.1.

3.46.2 Use Case Roles



Actor: Patient Identifier Cross-reference Manager

Role: It serves a well-defined set of Patient Identification Domains. The Patient Identifier Cross-reference Manager manages the cross-referencing of patient identifiers across Patient Identification Domains by providing a list of patient ID "aliases" via notification to a configured list of interested Patient Identifier Cross-reference Consumers.

Corresponding HL7 v3 Application Roles:

Patient Registry Informer (PRPA_AR201301UV02)

Actor: Patient Identifier Cross-reference Consumer

Role: Receives notifications from the Patient Identifier Cross-reference Manager of changes to patient ID aliases. Typically the Patient Identifier Cross-reference Consumer Actor uses this information to maintain information links about patients in a different patient ID domain.

Corresponding HL7 v3 Application Roles:

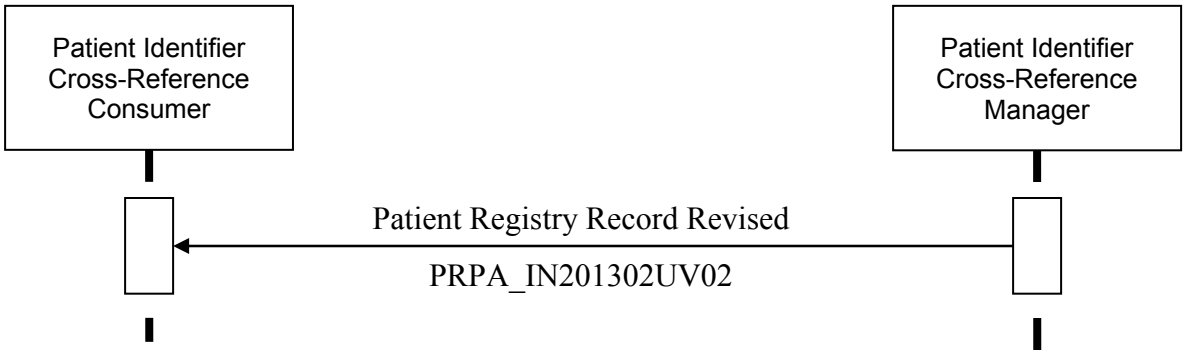
Patient Registry Tracker (PRPA_AR201302UV02)

3.46.3 Referenced Standards

HL7 Version 3 Edition 2008 Patient Administration DSTU, Patient Topic (found at http://www.hl7.org/memonly/downloads/v3edition.cfm#V32008)

Implementers of this transaction shall comply with all requirements described in ITI TF-2:Appendix V Web Services for IHE Transactions.

3.46.4 Interaction Diagrams



3.46-1 Update Patient Information Sequence

3.46.4.1 Update Patient Information

3.46.4.1.1 Trigger Events

The Patient Identifier Cross-reference Manager shall notify a Patient Identifier Cross-reference Consumer when there is a change in a set of cross-referenced patient identifiers for any of the patient identifiers belonging to Patient Identifier Domains of interest to the consumer. The configuration of the domains of interest to a Patient Cross-reference Consumer is maintained by the Patient Cross-reference Manager Actor.

Several notifications may have to be issued to communicate a single update to a set of cross-reference patient identifiers as required to reflect all the changes on the resulting sets of cross-reference patient Identifiers belonging to Patient Identifier Domains of interest to the Patient Identifier Cross-referencing Consumer.

The following HL7 trigger event will be used to update to the list of patient identifiers:

Patient Registry Record Revised (PRPA_TE201302UV02)

This trigger event signals that patient information was revised in a patient registry.

3.46.4.1.2 Message Semantics

The PIX Update Notification transaction is conducted by the Patient Revise (PRPA_MT201302UV02) message. The Patient Identifier Cross-reference Manager Actor initiates this transaction whenever identifier list information is updated for a patient.

Each message shall be acknowledged by the HL7 V3 Accept Acknowledgement (MCCI_MT000200UV01), which is described in Appendix O in this volume.

It is wholly the responsibility of the Patient Identifier Cross-reference Manager Actor to perform the matching of patient identifiers based on the patient traits it receives. The information provided by the Patient Identifier Cross-reference Manager Actor to Patient Identifier Cross-reference Consumer Actors shall only contain a list of cross-referenced identifiers for the domains of interest as configured with the Patient Identifier Cross-reference Manager actor in two or more of the domains managed by the cross-referencing Actor. Multiple notifications may need to be sent. For example:

Consumer CON_A is configured to receive update notifications for domains DOM_A and DOM_AD. Notifications are sent as follows:

- A PIXV3 Patient Registry Record Add message is sent for a patient for DOM_A. The update notification shall contain the patient identifier for DOM_A.
- A PIXV3 Patient Registry Record Add message is processed for DOM_AD. The Patient Identifier Cross-reference Manager cross references this patient with DOM_A. The update notification shall contain the patient identifiers for both DOM_A and DOM_AD.
- A PIXV3 Patient Registry Record Revise message is processed for DOM_AD changing the patient address. The Patient Identifier Cross-reference Manager cross references determines this patient is no longer the same patient as DOM_A. Two update notifications shall be sent. One containing the patient identifier for DOM_A. The other one containing the patient identifier for DOM_AD.

The list of cross-references is not made available until the set of policies and processes for managing the cross-reference function have been completed. The policies of administering identities adopted by the cooperating domains are completely internal to the Patient Identifier Cross-reference Manager Actor and are outside of the scope of this profile. Possible matches should not be communicated until the healthcare institution policies and processes embodied in the Patient Identifier Cross-reference Manager Actor reach a positive matching decision.

The Patient Identifier Cross-reference Manager Actor Configuration shall have configuration indicating which Identity Consumers are interested in receiving the PIXV3 Update Notification Transactions. This configuration information shall include identification of the identity consumer systems interested in receiving notifications and, for each of those systems, a list of the patient identifier domains of interest. The Patient Identifier Cross-reference Manager Actor should account for consumers interested in all domains.

Each message shall be acknowledged by the Accept Acknowledgment message sent by the receiver of the Patient Registry Record Revise message to its sender.

3.46.4.1.2.1 Major Components of the Patient Registry Record Revised

Patient

The *Patient* class is the entry point to the R-MIM for the *Patient Revise (PRPA_RM201302UV02)*. This is where the updated list of patient identifiers will be present.

Person

The *Person* class contains the name of the patient for additional verification purposes.

Provider Organization

The Patient class is optionally scoped by the provider organization where this person is a patient. The HL7 definition of the CMET requires that the provider organization needs to be identified by an id attribute, and at least one of address, telecommunications address, or contact person to be present. The id attribute SHALL have only a root, expressed as an ISO OID, and at least one of the id attributes of the Patient class SHALL have a matching root component (see appendix E on the use of the II data type for patient identifiers).

Other Identifiers

The *OtherIDs* class can be optionally used to capture other identifiers associated with the person such as a driver's license number or social security number. It is important to recognize that the HL7 RIM distinguishes between person-level IDs and patient-level IDs. In this transaction, however, the Patient Identity Cross-Reference Manager has the option to send all identifiers in the id attributes of the Patient class. If that is the case, the OtherIDs class shall not be used. For the purposes of interoperability where both HL7 V3 and HL7 v2.x based transactions are used, and the OtherIDs class is present, the following requirement is imposed on the OtherIDs.id attribute and on the scopingOrganization.id attribute:

OtherIDs.id.root SHALL be identical to scopingOrganization.id.root

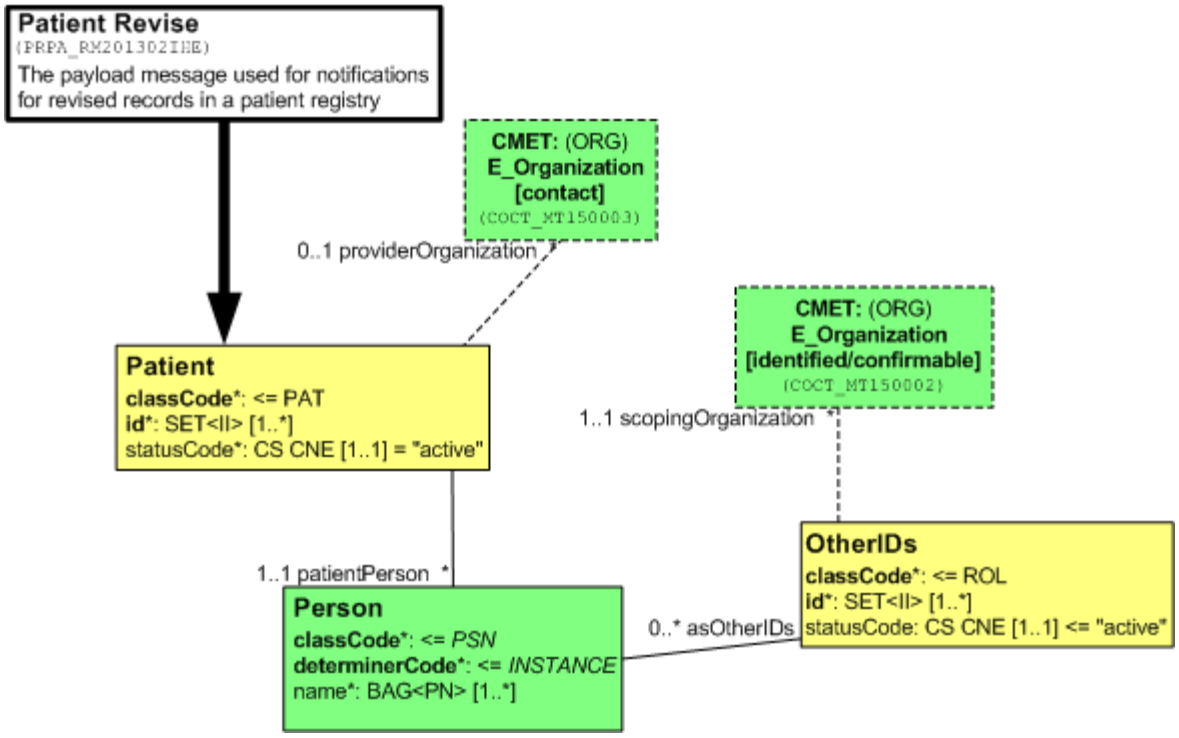
scopingOrganization.id.extension SHALL NOT have any value

3.46.4.1.2.2 Message Information Model of the Patient Registry Record Revise Message

Below is the Message Information Model for the Patient Identifiers message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict subset of the *Patient Revise (PRPA_RM201302UV02)* RMIM.

The base RMIM can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201302UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model (note that the resulting model is identical to the one described in 3.45.4.2.2.2):

- The focal entity choice is restricted to be only a person
- All optional classes are removed, except for the provider organization, and other identifiers
- All optional attributes in the Patient and Person class are removed



1410

Figure 3.46.4.1.2-1

The attributes of this model are described in the following table.

Table 3.46.4.1.2-4

PRPA_HD201302IHE PatientRevise	This HMD extract defines the message used to send a Patient Update Notification Derived from Figure 3.46.4.1.2-1 (PRPA_RM201302IHE)
Patient	The primary record for the focal person in a Patient Identity Cross-Reference Manager
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role
id [1..*] (M) Patient (SET<II>)	Linked identifiers from one or more Identity Domains
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.
Person	A subtype of LivingSubject representing a human being Both Person.name and Patient.id must be non-null
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity

PRPA_HD201302IHE PatientRevise	This HMD extract defines the message used to send a Patient Update Notification Derived from Figure 3.46.4.1.2-1 (PRPA_RM201302IHE)
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific person
name [1..*] Person (BAG<PN>)	Name(s) for this person
OtherIDs	Used to capture additional identifiers for the person such as a Drivers' license or Social Security Number.
classCode [1..1] (M) Role (CS) {CNE:ROL}	Structural attribute. This can be any specialization of "role"
id [1..*] (M) Role (SET<II>)	One or more identifiers issued to the focal person by the associated scopingOrganization (e.g. a Driver's License number issued by a DMV)

3.46.4.1.2.3 Control Act and Transmission Wrappers

Please see Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.46.4.1.2-2 contains the Transmission and Control Act wrappers used for the two interactions, and the associated constraints.

Table 3.46.4.1.2-6 Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000100UV01 – Send Message Payload	MFMI_MT700701UV01 – Master File / Registry Notification Control Act, Role Subject
The value of interactionId SHALL be set to PRPA_IN201302UV02 The value of processingModeCode SHALL be set to T The acceptAckCode SHALL be set to AL There SHALL be only one receiver Device	The trigger event code in ControlActProcess.code SHALL be set to PRPA_TE201302UV02 RegistrationEvent.statusCode SHALL be set to "active" There SHALL be no InReplacementOf act relationship for these interactions.

The composite message schemas which describe the full payload of these interactions, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the schema from the HL7 V3 2008 Normative Edition can be found at Edition2008/processable/multicacheschemas/PRPA_IN201302UV02.xsd)

3.46.4.1.2.4 Web Services Types and Messages

The Patient Registry Record Revised message will be transmitted using Web Services, according to the requirements specified in Appendix V.

The following WSDL naming conventions SHALL apply:

```
      "revise" message -> "PRPA_IN201302UV02_Message"
      acknowledgement  -> "MCCI_IN000002UV01_Message"
```

The following WSDL snippet describes the types for these messages:

```
      …
 <types>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201302UV02.xs
d"/>
<xsd:element name="PRPA_IN201302UV02"/>
</xsd:schema>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/MCCI_IN000002UV01.xs
d"/>
<xsd:element name="MCCI_IN000002UV01"/>
</xsd:schema>
  </types>
…
```

The messages are described by the following snippet:

```
      …
  <message name="PRPA_IN201302UV02_Message">
<part element="hl7:PRPA_IN201302UV02" name="Body"/>
  </message>
  <message name="MCCI_IN000002UV01_Message">
<part element="hl7:MCCI_IN000002UV01" name="Body"/>
  </message>
      …
```

The port types for the WSDL describing the Patient Identity Feed Service are described together with the expected actions of the actors which receive these messages in section ITI TF-2: 3.46.4.1.3.

3.46.4.1.3 Expected Actions - Patient Identifier Cross-reference Consumer

Whenever the Patient Identifier Cross-reference Consumer receives updated identifier information in a Patient Revise message that results in a change to the cross-referencing of a patient, the actor shall update its internal identifier information for the affected patient(s) in all domains in which it is interested. The identifiers found in both Patient.id and OtherIDs.id attributes shall be considered together to form a complete list of patient identifiers from the different Patient Identity domains in which this actor is interested.

In the case where the returned list of identifiers contains multiple identifiers for a single domain, the Patient Identifier Cross-reference Consumer shall either use ALL of the multiple identifiers from the given domain or it shall ignore ALL of the multiple identifiers from the given domain.

This allows Patient Identifier Cross-reference Consumer Actors capable of handling multiple identities for a single patient within a single domain (i.e., those that can correctly aggregate the information associated with the different identifiers) to do so. For those Patient Identifier Cross-reference Consumer Actors not capable of handling this situation, ignoring the entire list of different identifiers prevents the consumer from presenting incomplete data.

3.46.4.1.3.1 Web Services Port Type and Binding Definitions

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "PIXConsumer".

The following WSDL naming conventions SHALL apply:

```
wsdl:definitions/@name="PIXConsumer":
PIX update message          -> "PRPA_IN201302UV02_Message"
acknowledgement             -> "MCCI_IN000002UV01_Message"
portType                    -> "PIXConsumer_PortType"
get identifiers operation   -> "PIXConsumer_PRPA_IN201302UV02"
SOAP 1.2 binding            -> "PIXConsumer_Binding_Soap12"
SOAP 1.2 port               -> "PIXConsumer_Port_Soap12"
```

The following WSDL snippets specify the Patient Update Port Type and Binding definitions, according to the requirements specified in Appendix V.

3.46.4.1.3.1.1 Port Type

```
 <portType name="PIXConsumer_PortType">
      <operation name="PIXConsumer_PRPA_IN201302UV02">
<input message="tns:PRPA_IN201302UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201302UV02"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
</operation>
  </portType>
```

3.46.4.1.3.1.2 Bindings

SOAP 1.2 binding:

```
…
  <binding name="PIXConsumer_Binding_Soap12" type="PIXConsumer_PortType">
    <wsoap12:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="PIXConsumer_PRPA_IN201302UV02">
      <wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201302UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
```



```
        <wsoap12:body use="literal"/>
      </output>
    </operation>
  </binding>
```

…

An informative WSDL for the PIX Consumer Actor implementing the PIXV3 profile is available online on the IHE FTP site, see Appendix W.

3.46.4.1.3.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.46.5 Security Requirements

The relevant security requirements are discussed in the Patient Identity Feed HL7 V3 transaction (see ITI TF-2: 3.44.5)

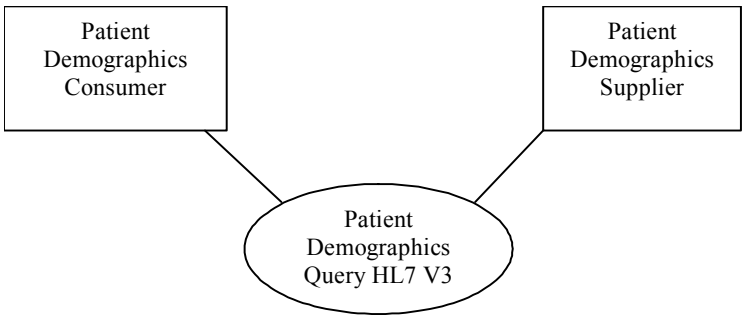
3.47 Patient Demographics Query HL7 V3

This section corresponds to Transaction ITI-47 of the IHE Technical Framework. Transaction ITI-47 is used by the Patient Demographics Consumer and Patient Demographics Supplier actors.

3.47.1 Scope

The scope is identical to ITI TF-2: 3.21.1.

3.47.2 Use Case Roles



Actor: Patient Demographics Consumer

Role: Requests a list of patients matching a minimal set of demographic criteria (*e.g.*, ID or partial name) from the Patient Demographics Supplier. Populates its attributes with demographic information received from the Patient Demographics Supplier.

Corresponding HL7 v3 Application Roles:

Person Registry Query Placer (PRPA_AR201303UV02)

Actor: Patient Demographics Supplier

Role: Returns demographic information for all patients matching the demographic criteria provided by the Patient Demographics Consumer.

Corresponding HL7 v3 Application Roles:

Person Registry Query Fulfiller (PRPA_AR201304UV02)

3.47.3 Referenced Standards

HL7 Version 3 Edition 2008, Patient Administration DSTU, Patient Topic (found at http://www.hl7.org/memonly/downloads/v3edition.cfm#V32008)

Implementers of this transaction shall comply with all requirements described in ITI TF-2:Appendix V Web Services for IHE Transactions.

3.47.4 Interaction Diagrams

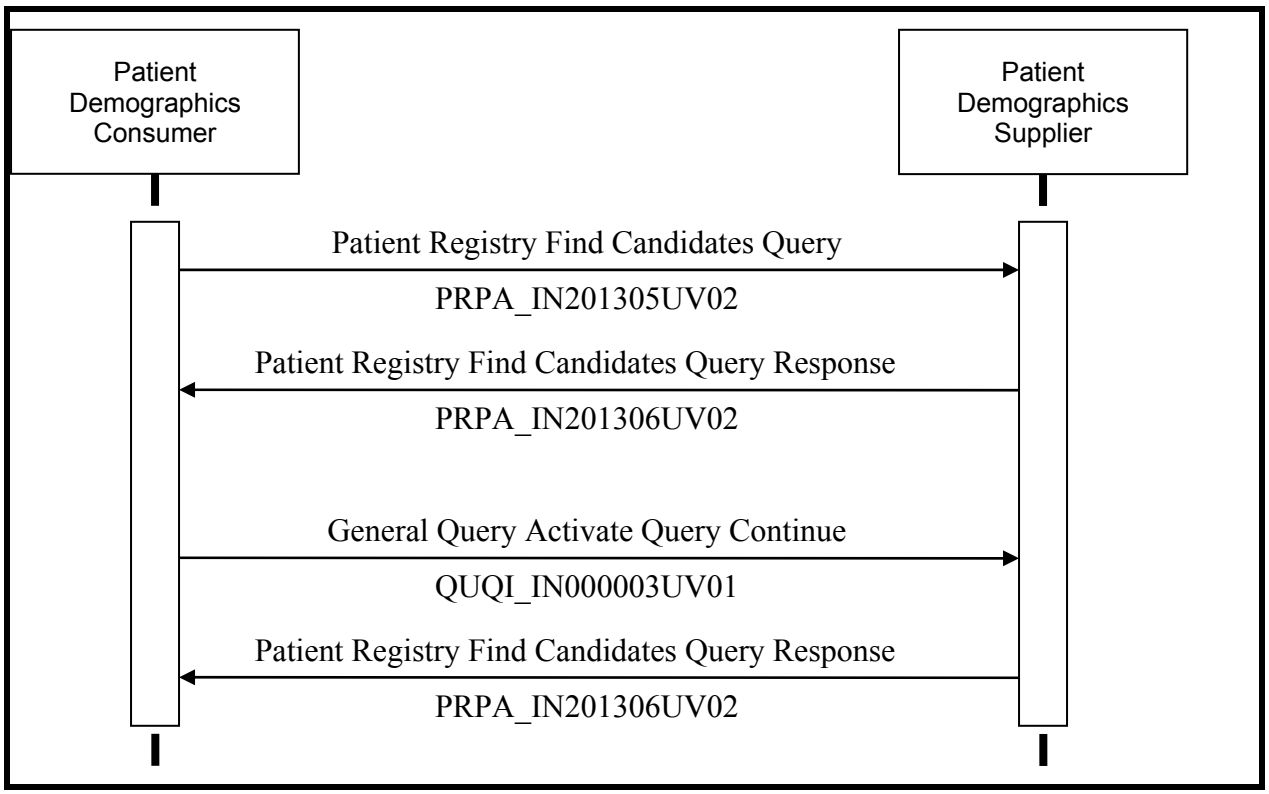


Figure 3.46.4-1 Find Candidates Query

3.47.4.1 Patient Demographics Query

3.47.4.1.1 Trigger Events

A Patient Demographics Consumer's need to select a patient based on demographic information about patients whose information matches a set of known data will trigger the Patient Demographics Query based on the following HL7 trigger event:

Find Candidates Query (PRPA_TE201305UV02)

An application, in the role of Query Placer, sends a query-by-parameter message to request that the application return *all* person records that match the demographic information sent in the query parameters.

3.47.4.1.2 Message Semantics

The Find Candidates Query is supported by the Patient Registry Query by Demographics (PRPA_MT201306UV02) message. The Patient Demographics Consumer actor shall generate the query message whenever it needs to select from a list of patients whose information matches a set of demographic data.

The components of the Patient Registry Query by Demographics message with cardinality greater than 0 (as shown below) are required, and the detailed description of the message is provided in Sections 3.47.4.1.2.1 to 3.47.4.1.2.4.

The receiver shall respond to the query by sending the Patient Registry Find Candidates Response message (PRPA_MT201310UV02), which uses the Application Level Acknowledgement transmission wrapper. This satisfies the requirements of original mode acknowledgment; no intermediate Accept Acknowledgement is to be sent. The response message shall contain demographic records that reflect the best fit to all of the search criteria received in the Patient Registry Query by Demographics message.

3.47.4.1.2.1 Major Components of the Patient Registry Query by Demographics

LivingSubjectName Parameter

This optional parameter specifies the name of the person whose information is being queried. For this parameter item, a single person name (PN) data item shall be specified in the LivingSubjectName.value attribute. Only certain name parts within the PN data type (e.g. family name) may be specified. If the sender needs to indicate that the name parts specified are not limited to an exact match, then the *use* attribute of the *value* element shall be set to "SRCH".

LivingSubjectAdministrativeGender Parameter

This optional parameter specifies the administrative gender of the person whose information is being queried. For this parameter item, a single administrative gender code shall be specified in the LivingSubjectAdministrativeGender.value attribute.

LivingSubjectBirthTime Parameter

This optional parameter specifies the birth data and time of the person whose information is being queried. This parameter can convey an exact moment (e.g., January 1, 1960 @ 03:00:00 EST), an approximate date (e.g., January 1960), or even a range of dates (e.g., December 1, 1959 through March 31, 1960).

PatientAddress Parameter

This optional parameter specifies one or more addresses associated with the person whose information is being queried.

LivingSubjectId Parameter

This optional repeating parameter specifies an identifier associated with the patient whose information is being queried (e.g. a local identifier, or an account identifier). If multiple instances of this parameter are provided in the query, all of the associated identifiers must match. The identifier specified in the LivingSubjectId.value attribute is expressed using the II data type. Please see Appendix E for the use of the II data type for patient identifiers.

OtherIDsScopingOrganization Parameter

This optional repeating parameter specifies the assigning authority/authorities of the Patient Identity Domain(s) for which identifiers are to be returned. The identifier specified in the OtherIDsScopingOrganization.value attribute shall be expressed using the II data type, where the *root* element contains a valid ISO OID, and there is no *extension* element. If no such parameter is supplied, the patient demographics supplier is required to return the identifiers from all Patient Identity Domains known to it. Any parameter value which is not recognized by the target patient information source shall cause an error condition.

3.47.4.1.2.2 Message Information Model of the Patient Registry Query by Demographics Message

Below is the Message Information Model for the Query by Demographics message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict subset of the *Patient Registry Query by Demographics (PRPA_RM201306UV02) RMIM.*

The base RMIM can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201306UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model:

- Exactly one value attribute shall be present in each parameter
- Only the LivingSubjectId, OtherIDsScopingOrganization, and LivingSubjectName parameters can have more than one instance
- The optional attributes ParameterList.id, MatchCriterionList.id, QueryByParameter responseElementGroupId, QueryByParameter.modifyCode, and QueryByParameter.executionAndDeliveryTime were omitted from the model
- QueryByParameter.responsePriorityCode is required and is fixed to I (Immediate)

- QueryByParameter.responseModalityCode is required and is fixed to R (Real Time)
- QueryByParameter.statusCode is defaulted to "new".
- The data type of MatchAlgorithm.value is constrained to ST
- The data type of MinimumDegreeMatch.value is constrained to INT
- The data type of LivingSubjectName.value is constrained to PN
- The optional SortControl was omitted from the model
- The optional MatchWeight was omitted from the model
- The following optional parameters were omitted from the model:
  - PatientTelecom
  - PrincipalCareProviderId
  - PrinicpalCareProvisionId
  - MothersMaidenName
  - LivingSubjectDeceasedTime
  - PatientStatusCode
  - LivingSubjectBirthPlaceName
  - LivingSubjectBirthPlaceAddress

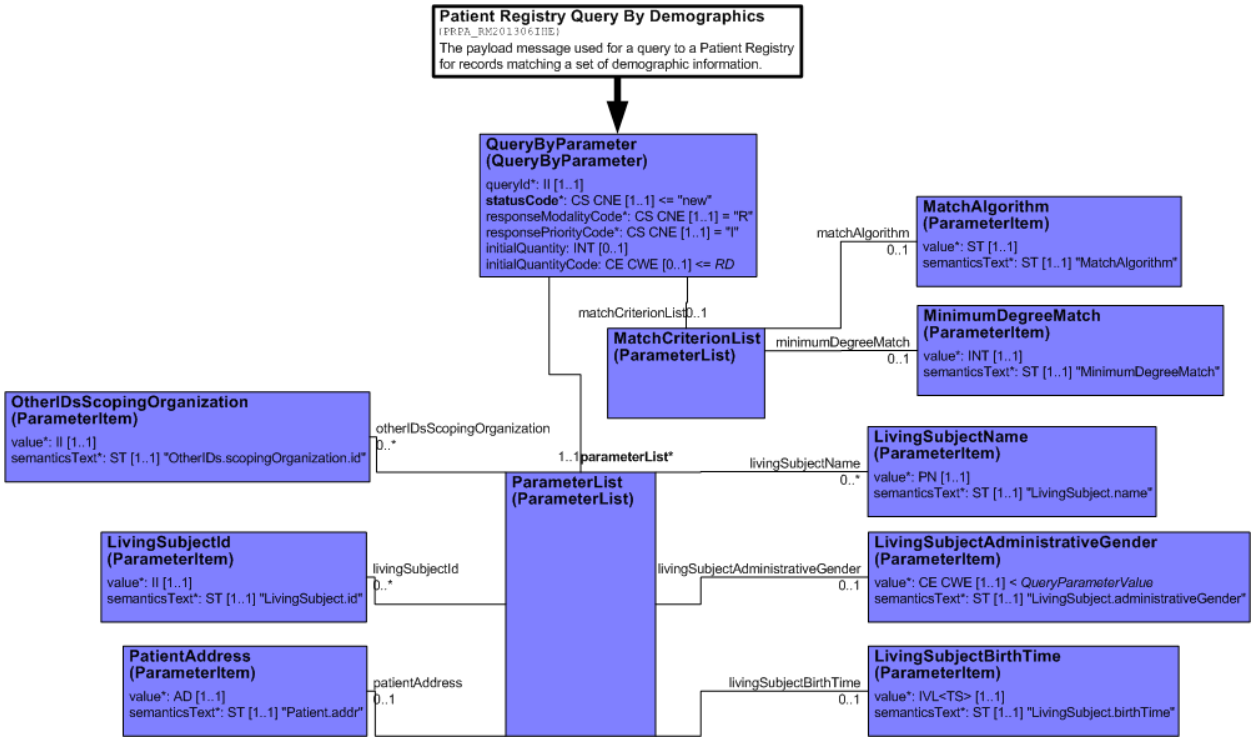


Figure 3.47.4.1.2-1

The attributes of this model are described in the following table:

1645 **Table 3.47.4.1.2-1**

PRPA_HD201306IHE Patient Registry Query by Demographics	This HMD extract defines the message used to query a patient registry for records matching a set of demographics information. Derived from Figure 3.47.4.1.2-1 (PRPA_RM201306IHE)
QueryByParameter	The entry point for the domain content in this query
queryId [1..1] QueryByParameter (II)	Unique identifier for the query
statusCode [1..1] (M) QueryByParameter (CS) {CNE:QueryStatusCode, default="new"}	The status of the query, default is "new"
responseModalityCode [1..1] QueryByParameter (CS) {CNE:ResponseModality, fixed value="R"}	The mode of the response – always real-time.
responsePriorityCode [1..1] QueryByParameter (CS) {CNE:QueryPriority, fixed value="I"}	The Patient Demographics Supplier is required to send an immediate response.
initialQuantity [0..1] QueryByParameter (INT)	Defines the maximum size of the response that can be accepted by the requesting application
initialQuantityCode [0..1] QueryByParameter (CE) {CWE:QueryRequestLimit, default="RD"}	Defines the units associated with the initialQuantity; default is "records".
MatchAlgorithm	This parameter conveys instructions to the patient demographics supplier specifying the preferred matching algorithm to use
value [1..1] ParameterItem (ST)	The name of the algorithm
semanticsText [1..1] ParameterItem (ST){default= "MatchAlgorithm"}	
MinimumDegreeMatch	This parameter conveys instructions to the patient demographics supplier specifying minimum degree of match to use in filtering results
value [1..1] ParameterItem (INT)	The numeric value of the degree of match
semanticsText [1..1] ParameterItem (ST){default= "MatchAlgorithm"}	
LivingSubjectAdministrativeGender	This query parameter is a code representing the administrative gender of a person in a patient registry.
value [1..1]	

PRPA_HD201306IHE Patient Registry Query by Demographics	This HMD extract defines the message used to query a patient registry for records matching a set of demographics information. Derived from Figure 3.47.4.1.2-1 (PRPA_RM201306IHE)
ParameterItem (CE) {CWE:AdministrativeGender}	
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.administrativeGender"}	
LivingSubjectBirthTime	This query parameter is the birth date of a living subject.
value [1..1] ParameterItem (IVL<TS>)	A date or date range. This parameter can convey an exact moment (e.g., January 1, 1960 @ 03:00:00 EST), an approximate date (e.g., January 1960), or even a range of dates (e.g., December 1, 1959 through March 31, 1960).
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.birthTime"}	
LivingSubjectId	
value [1..1] (M) ParameterItem (II)	A patient identifier, used to assist in finding a match for the query.
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.id"}	
LivingSubjectName	This query parameter is the name of a person. If multiple instances of LivingSubjectName are provided, the receiver must consider them as possible alternatives, logically connected with an "or".
value [1..1] ParameterItem (PN)	The name "use" attribute can convey that a name is to be matched using "fuzzy" matching, and does not require exact match. Only some of the name parts may be populated. If, for example, only a family name part of a person's name is sent, then the query would match all persons with that family name regardless of their given names or initials.
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.name"}	
PatientAddress	This query parameter is a postal address for corresponding with a patient
value [1..1] ParameterItem (AD)	
semanticsText [1..1] ParameterItem (ST){default= "Patient.addr"}	
OtherIDsScopingOrganization	Optional parameter specifying the assigning authority of a Patient Identity Domain
value [1..1] ParameterItem (II)	The identifier for a Patient Identity Domain's assigning authority. IHE restriction:

PRPA_HD201306IHE Patient Registry Query by Demographics	This HMD extract defines the message used to query a patient registry for records matching a set of demographics information. Derived from Figure 3.47.4.1.2-1 (PRPA_RM201306IHE)
	The value.root attribute SHALL be a valid ISO OID The value.extension attribute SHALL NOT be present
semanticsText [1..1] ParameterItem (ST){default= "OtherIDs.scopingOrganization.id"}	

3.47.4.1.2.3 Control Act and Transmission Wrappers

Please see Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.44.4.1.2-2 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.47.4.1.2-7 Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000100UV01 – Send Message Payload	QUQI_MT021001UV01 – Query Control Act Request: Query By Parameter
The value of interactionId SHALL be set to PRPA_IN201305UV02 The value of processingModeCode SHALL be set to T The acceptAckCode SHALL be set to AL There SHALL be only one receiver Device	The value of ControlActProcess.moodCode SHALL be set to RQO The trigger event code in ControlActProcess.code SHALL be set to PRPA_TE201305UV02 If an authorOrPerformer participation is present, the value of authroOrPerformer.typeCode SHALL be set to AUT

The composite message schemas which describe the full payload of this interaction, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the schemas from the HL7 V3 2008 Normative Edition can be found at Edition2008/processable/multicacheschemas/PRPA_IN201305UV02.xsd)

3.47.4.1.2.4 Web Services Types and Messages

The Patient Registry Query by Demographics message will be transmitted using Web Services, according to the requirements specified in Appendix V.

The following WSDL naming conventions SHALL apply:

```
query message    -> "PRPA_IN201305UV02_Message"
```

The following WSDL snippet describes the type for this message:

```
      …
 <types>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
```



```
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201305UV02.xsd"/>
<xsd:element name="PRPA_IN201305UV02"/>
</xsd:schema>
  </types>
…
```

The message is described by the following snippet:

```
      …
  <message name="PRPA_IN201305UV02_Message">
<part element="hl7:PRPA_IN201305UV02" name="Body"/>
  </message>
      …
```

The port types for the WSDL describing the Patient Demographics Service are described together with the expected actions of the actors which receive these messages in section ITI TF-2: 3.47.4.2.3.

3.47.4.1.3 Expected Actions

3.47.4.1.3.1 Immediate Response

The Patient Demographics Supplier shall immediately return a Find Candidates Response message as specified below in Section 3.47.4.2. The response message uses the Application Acknowledgement transmission wrapper, as specified in Appendix O.1.3, and no other acknowledgments are part of this transaction.

3.47.4.1.3.2 Query Parameter Processing

The Patient Demographics Supplier Actor shall be capable of accepting, searching on, and responding with attributes in the Query Person by Demographics message.

Handling of phonetic issues, alternate spellings, upper and lower case, wildcards, accented characters, etc., if deemed appropriate, is to be supported by the Patient Demographics Supplier rather than by the Patient Demographics Consumer. The Supplier shall return at least all exact matches to the query parameters sent by the Consumer; IHE does not further specify matching requirements, except as already discussed in the LivingSubjectName parameter description.

3.47.4.1.3.3 Incremental Response Processing

The Patient Demographics Supplier Actor shall be capable of accepting and processing the *QueryByParameter.responsePriorityCode* attribute. In particular, the Patient Demographics Supplier Actor shall respond in immediate mode.

Also, the Patient Demographics Supplier Actor shall be able to interpret *QueryByParameter.initialQuantity* to return successive responses of partial lists of records. When processing incremental responses, the Patient Demographics Consumer actor shall request

additional responses using the Query Control Act Request Continue/Cancel message (QUQI_MT000001UV01), as described in Section 3.47.4.3.

3.47.4.1.3.4 Web Services Port Type and Binding Definitions

These definitions are part of the query response message. Please see 3.47.4.2.3 for more information.

3.47.4.1.3.5 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.47.4.2 Patient Demographics Query Response

3.47.4.2.1 Trigger Events

The Patient Demographics Supplier's response to the Find Candidates Query message is triggered by the following trigger:

Find Candidates Response (PRPA_TE201306UV02)

An application returns a Patient Registry Find Candidates Response message populated with information it holds for *each* person whose record matches the demographic information sent as parameters in a query-by-parameter message.

3.47.4.2.2 Message Semantics

The Patient Registry Find Candidates Response message (PRPA_MT201310UV02) is sent by the Patient Demographics Supplier Actor in direct response to the query (PRPA_MT201306UV02) or query continuation (QUQI_MT000001UV01) message previously received.

The components of the message with cardinality greater than 0 (as shown below) are required, and the detailed description of the message is provided in Sections 3.47.4.2.2.1 to 3.47.4.2.2.4. All other attributes of the message are optional.

3.47.4.2.2.1 Major Components of the Patient Registry Find Candidates Response Message

This message shares all the major components of the Patient Activate/Revise messages, as described in 3.44.4.1.2.1. The only additional component is the QueryMatchObservation class.

Query Match Observation

The *QueryMatchObservation* class is used to convey information about the quality of the match for each record returned by the query response.

3.47.4.2.2.2 Message Information Model of the Patient Registry Find Candidates Response Message

Below is the Message Information Model for the Patient Registry Find Candidates Response message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict common subset of the *Patient Registry Find Candidates Response (PRPA_RM201310UV02)* RMIM.

The base RMIM can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201310UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model:

- The focal entity choice is restricted to be only a person
- The relationship holder of the personal relationship is restricted to be a person (using CMET COCT_MT030207UV)
- The following roles are omitted:
  - asPatientOfOtherProvider
  - birthPlace
  - guarantor
  - guardian
  - contactParty
  - asMember
  - careGiver
  - asStudent
- The following participations are omitted:
  - subjectOf (administrativeObservation)
  - coveredPartyOf (coverage)

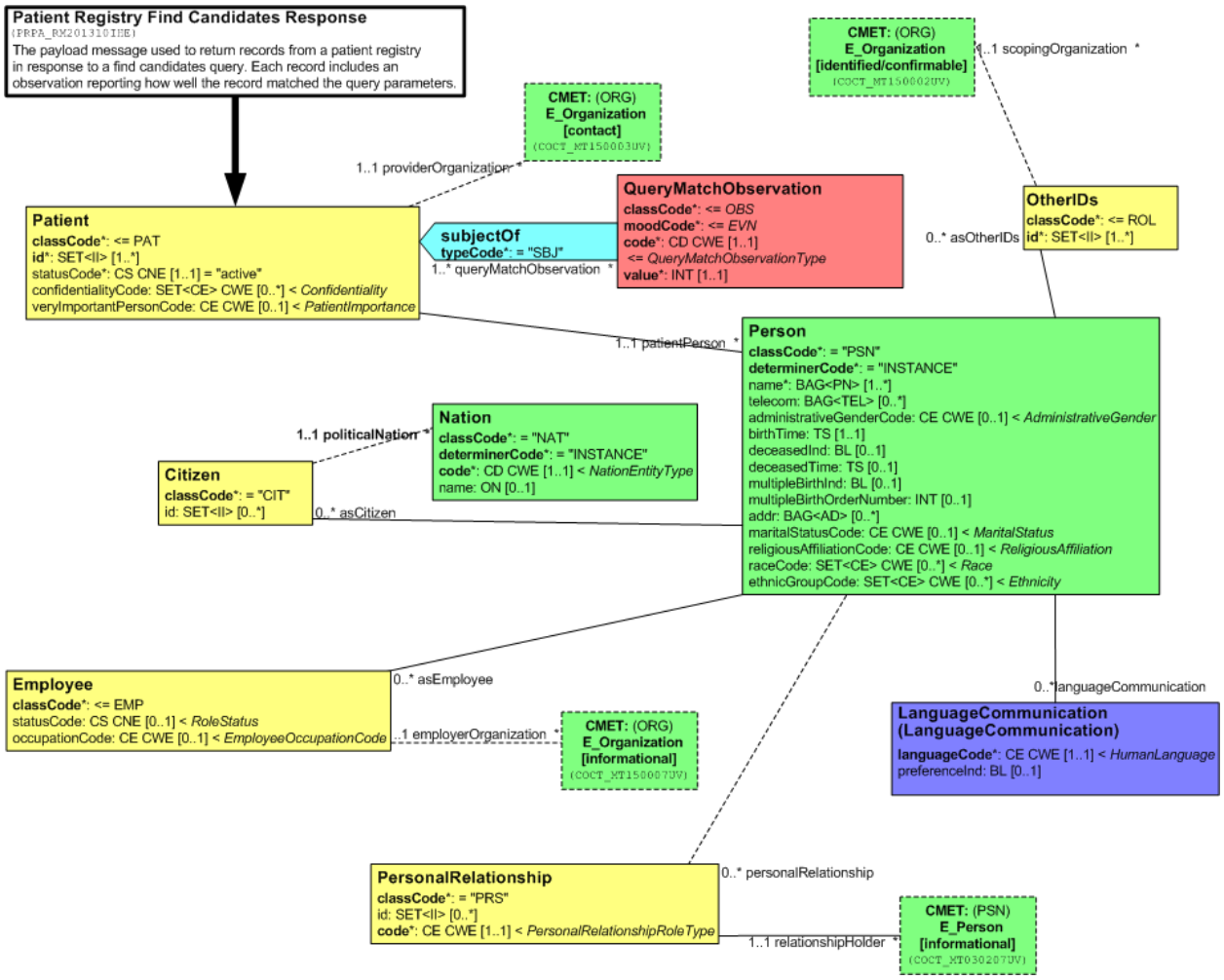


Figure 3.47.4.2.2-1

The attributes of this model are described in the following table. Note that CMETs are not discussed, as the HL7 definitions for them are being used.

Table 3.47.4.2.2-8

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.47.4.2.2-1 (PRPA_RM201310IHE)
Patient	The primary record for the focal person in a Patient Demographics Supplier
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role
id [1..*] (M)	Patient identifiers. Patient Identifiers from different Identity

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.47.4.2.2-1 (PRPA_RM201310IHE)
Patient (SET<II>)	Domains may be contained either here, or in the OtherIDs.id attributes, but not in both places. At least one Patient Identifier shall be present in this attribute
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.
confidentialityCode [0..*] Patient (SET<CE>) {CWE:Confidentiality}	Value(s) that control the disclosure of information about this living subject as a patient
veryImportantPersonCode [0..1] Patient (CE) {CWE:PatientImportance}	A code specifying the patient's special status granted by the scoper organization, often resulting in preferred treatment and special considerations. Examples include board member, diplomat.
Person	A subtype of LivingSubject representing a human being Either Person.name or Patient.id must be non-null
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific person
name [1..*] Person (BAG<PN>)	Name(s) for this person
telecom [0..*] Person (BAG<TEL>)	Telecommunication address(es) for communicating with this person
administrativeGenderCode [0..1] Person (CE) {CWE:AdministrativeGender}	A value representing the gender (sex) of this person. Note: this attribute does not include terms related to clinical gender which is a complex physiological, genetic and sociological concept that requires multiple observations in order to be comprehensively described.
birthTime [0..1] Person (TS)	The date and time this person was born
deceasedInd [0..1] Person (BL)	An indication that this person is dead
deceasedTime [0..1] Person (TS)	The date and time this person died
multipleBirthInd [0..1] Person (BL)	An indication that this person was part of a multiple birth

PRPA_HD201310IHE Patient Registry Find Candidates Response	**This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.47.4.2.2-1 (PRPA_RM201310IHE)**
multipleBirthOrderNumber [0..1] Person (INT)	The order in which this person was born if part of a multiple birth
addr [0..*] Person (BAG<AD>)	Address(es) for corresponding with this person
maritalStatusCode [0..1] Person (CE) {CWE:MaritalStatus}	A value representing the domestic partnership status of this person
religiousAffiliationCode [0..1] Person (CE) {CWE:ReligiousAffiliation}	A value representing the primary religious preference of this person
raceCode [0..*] Person (SET<CE>) {CWE:Race}	A set of values representing the races of this person
ethnicGroupCode [0..*] Person (SET<CE>) {CWE:Ethnicity}	A set of values representing the ethnic groups of this person
OtherIDs	Used to capture additional identifiers for the person such as a Drivers' license or Social Security Number.
classCode [1..1] (M) Role (CS) {CNE:ROL}	Structural attribute. This can be any specialization of "role" except for Citizen, or Employee.,
id [1..*] (M) Role (SET<II>)	One or more identifiers issued to the focal person by the associated scopingOrganization (e.g. identifiers from a different Patient Identity Domain).
PersonalRelationship	A personal relationship between the focal living subject and another living subject
classCode [1..1] (M) Role (CS) {CNE:PRS, fixed value= "PRS"}	Structural attribute; this is a "personal relationship" role
id [0..*] Role (SET<II>)	Identifier(s) for this personal relationship
code [1..1] (M) Role (CE) {CWE:PersonalRelationshipRoleType}	A required value specifying the type of personal relationship between the relationshipHolder and the scoping living subject drawn from the PersonalRelationshipRoleType domain, for example, spouse, parent, unrelated friend
Citizen	Used to capture person information relating to citizenship.
classCode [1..1] (M) Role (CS) {CNE:CIT, fixed value= "CIT"}	Structural attribute; this is a "citizen" role
id [0..*]	Identifier(s) for the focal person as a citizen of a nation

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.47.4.2.2-1 (PRPA_RM201310IHE)
Role (SET<II>)	
Nation	A politically organized body of people bonded by territory and known as a nation.
classCode [1..1] (M) Organization (CS) {CNE:NAT, fixed value= "NAT"}	Structural attribute; this is a 'nation' type of entity
determinerCode [1..1] (M) Organization (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific entity
code [1..1] (M) Organization (CD) {CWE:NationEntityType}	A value that identifies a nation state
name [0..1] Organization (ON)	A non-unique textual identifier or moniker for this nation
Employee	A relationship of the focal person with an organization to receive wages or salary. The purpose of this class is to identify the type of relationship the employee has to the employer rather than the nature of the work actually performed. For example, it can be used to capture whether the person is a Military Veteran or not..
classCode [1..1] (M) Employee (CS) {CNE:EMP}	Structural attribute; this is an "employee" role
statusCode [0..1] Employee (CS) {CNE:RoleStatus}	A value specifying the state of this employment relationship (based on the RIM Role class state-machine), for example, active, suspended, terminated.
occupationCode [0..1] Employee (CE) {CWE:EmployeeOccupationCode}	A code qualifying the classification of kind-of-work based upon a recognized industry or jurisdictional standard. OccupationCode is used to convey the person's occupation as opposed to jobClassCode (not used in this transaction) which characterizes this particular job. For example, it can be used to capture whether the person is a Military Veteran or not.
LanguageCommunication	A language communication capability of the focal person
languageCode [1..1] (M) LanguageCommunication (CE) {CWE:HumanLanguage}	A value representing a language for which the focal person has some level of proficiency for written or spoken communication. Examples: Spanish, Italian, German, English, American Sign
preferenceInd [0..1] LanguageCommunication (BL)	An indicator specifying whether or not this language is preferred by the focal person for the associated mode
QueryMatchObservation	Used to convey information about the quality of the match for each record.

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.47.4.2.2-1 (PRPA_RM201310IHE)
classCode [1..1] (M) Observation (CS) {CNE:, default= "OBS"}	Structural attribute – this is an observation
moodCode [1..1] (M) Observation (CS) {CNE:, default= "EVN"}	Structural attribute – this is an event
code [1..1] (M) Observation (CD) {CWE:QueryMatchObservationType}	A code, identifying this observation as a query match observation.
value [1..1] (M) QueryMatchObservation (INT)	A numeric value indicating the quality of match for this record. It shall correspond to the MinimumDegreeMatch.value attribute of the original query, and it shall have the same meaning (e.g. percentage, indicating confidence in the match).

3.47.4.2.2.3 Control Act and Transmission Wrappers

Please see Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.44.4.1.2-2 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.47.4.4.2-9 Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000300UV01 – Send Application Acknowledgement	MFMI_MT700711UV01 – Master File/Registry Query Response Control Act (Role Subject)
The value of interactionId SHALL be set to PRPA_IN201306UV02 The value of processingModeCode SHALL be set to T The acceptAckCode SHALL be set to NE There SHALL be only one receiver Device	The value of ControlActProcess.moodCode SHALL be set to EVN The trigger event code in ControlActProcess.code SHALL be set to PRPA_TE201306UV02 There SHALL be zero or more RegistrationEvents present in this message. For each matching record returned, there SHALL be exactly one RegistrationEvent present in this message. If a RegistrationEvent is part of the message, there SHALL be exactly one Patient role present in the payload. There SHALL be no replacementOf act-relationship present in this message There SHALL be a QueryByParameter copy of the original query. The QueryAck.resultTotalQuantity, QueryAck.resultCurrentQuantity, and QueryAck.resultRemainingQuantity attributes SHALL have the appropriate values populated.

The composite message schemas which describe the full payload of this interaction, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the schemas from the HL7 V3 2008 Normative Edition can be found at Edition2008/processable/multicacheschemas/PRPA_IN201306UV02.xsd).

3.47.4.2.2.4 Web Services Types and Messages

The Patient Registry Query by Demographics message will be transmitted using Web Services, according to the requirements specified in Appendix V.

The following WSDL naming conventions SHALL apply:

```
response message    -> "PRPA_IN201306UV02_Message"
```

The following WSDL snippet describes the type for these message:

```
      …
 <types>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201306UV02.xs
d"/>
<xsd:element name="PRPA_IN201306UV02"/>
</xsd:schema>
  </types>
…
```

The message is described by the following snippet:

```
      …
  <message name="PRPA_IN201306UV02_Message">
<part element="hl7:PRPA_IN201306UV02" name="Body"/>
  </message>
      …
```

3.47.4.2.3 Expected Actions

The Patient Demographics Supplier shall perform the matching of patient data based on the query parameter values it receives. The information provided by the Patient Demographics Supplier Actor to Patient Demographics Consumer Actors is a list of possible matching patients from the patient information source associated with the value that the Consumer sent in the *Device* class of the transmission wrapper of the query message.

If *OtherIDsScopingOrganization* parameters were part of the query, and they were recognized by the Patient Demographics Supplier as identifying known Patient Identity Domains, the response will also, for each patient, contain any Patient ID values found in the specified domains.

The mechanics of the matching algorithms used are internal to the Patient Demographics Supplier Actor and are outside of the scope of this framework.

The Patient Demographics Supplier Actor shall respond to the query request as described by the following 3 cases:

Case 1 The Patient Demographics Supplier Actor finds (in the patient information source associated with *Receiver.Device* in the query transmission wrapper) at least one patient record matching the criteria sent in the query parameters. There were no *OtherIDsScopingOrganization* parameters in the query.

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

OK (data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper)

One RegistrationEvent (and the associated Patient role, subject of that event) is returned from the patient information source for each patient record found. If the Patient Demographics Supplier Actor returns data for multiple patients, it shall return these data in successive occurrences of the RegistrationEvent class within the transmission wrapper.

For each patient, one or more identifiers from the Patient ID Domain associated with the target patient information source identified by *Receiver.Device* are represented as Patient.id attributes.

If an incremental number of records are specified in *QueryByParamter.initialQuantity*, and the number of records to be sent exceeds that incremental number, the Supplier returns only the incremental number of records, correctly populating the *resultTotalQuantity*, *resultCurrentQuantity*, and *resultRemainingQuantity* attributes of the *QueryAck* class in the control act wrapper. The consumer will sent a query continuation message as a subsequent query request for the next increment of responses.

Case 2: The Patient Demographics Supplier Actor finds (in the patient information source associated with *Receiver.Device* in the query transmission wrapper) at least one patient record matching the criteria sent in the query parameters. One or more *OtherIDsScopingOrganization* parameters are present in the query; the Supplier recognizes all the requested domains.

AA (application accept) is returned in *Acknowledgement.typeCode* (transmission wrapper).

OK (data found, no errors) is returned in *QueryAck.queryResponseCode* (control act wrapper)

One *RegistrationEvent* (and the associated *Patient* role, subject of that event) is returned from the patient information source for each patient record found. If the Patient Demographics Supplier Actor returns data for multiple patients, it shall return these data in successive occurrences of the *RegistrationEvent* class within the transmission wrapper.

For each patient, the identifiers from all the Patient ID Domains requested via the *OtherIDsScopingOrganization* parameter are returned either as values of the *Patient.id* attribute, or as values of the *OtherIDs.id* attribute. The same patient identifier value shall not appear in both the Patient.id and OtherIDs.id attributes. The Patient Demographics consumer shall consider the identifiers from both places as equivalently valid. If the Patient Demographics supplier cannot provide a patient ID for some of the requested Patient ID Domains, then an *OtherIDs.id* attribute shall have an appropriate null value, and the *ScopingOrganization* class shall identify the corresponding domain.

If an incremental number of records are specified in *QueryByParamter.initialQuantity*, and the number of records to be sent exceeds that incremental number, the Supplier returns only the incremental number of records, correctly populating the *resultTotalQuantity*, *resultCurrentQuantity*, and *resultRemainingQuantity* attributes of the *QueryAck* class in the control act wrapper. The consumer will sent a query continuation message as a subsequent query request for the next increment of responses.

Case 3: The Patient Demographics Supplier Actor does not recognize one or more *OtherIDsScopingOrganization* parameters as representing valid Patient Identity Domains.

AE (application error) is returned in *Acknowledgement.typeCode* (transmission wrapper) and in *QueryAck.queryResponseCode* (control act wrapper).

No *RegistrationEvent* is returned.

The queried-for patient identification domains are returned in the *QueryByParameter* parameter list (control act wrapper).

For each domain that was not recognized, an AcknowledgmentDetail class is returned in which the attributes typeCode, code, and location are valued as follows:

Attribute	VALUE
typeCode	E
code	204 (Unknown Key Identifier)
location	XPath expression for the value element of the OtherIDsScopingOrganization parameter (which includes the repetition number of the parameter)

3.47.4.2.3.1 Web Services Port Type and Binding Definitions

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "PDSupplier".

The following WSDL naming conventions SHALL apply:

```
      wsdl:definitions/@name="PDSupplier":
      patient demographics query    -> "PRPA_IN201305UV02_Message"
      patient demographics response -> "PRPA_IN201306UV02_Message"
      continuation query            -> "QUQI_IN000003UV01_Message"
      accept acknowledgement        -> "MCCI_IN000002UV01_Message"
      portType                      -> "PDSupplier_PortType"
      get candidates operation      -> "PDSupplier_PRPA_IN201305UV02"
      continuation operation        ->
"PDSupplier_PRPA_IN201305UV02_Continue"
      cancel operation              -> "PDSupplier_PRPA_IN201305UV02_Cancel"
      SOAP 1.2 binding              -> "PDSupplier_Binding_Soap12"
      SOAP 1.2 port                 -> "PDSupplier_Port_Soap12"
```

The following WSDL snippets specify the Patient Demographics Query Port Type and Binding definitions, according to the requirements specified in Appendix V.

3.47.4.2.3.1.1 Port Type

```
 <portType name="PDSupplier_PortType">
      <operation name="PDSupplier_PRPA_IN201305UV02">
<input message="tns:PRPA_IN201305UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201305UV02"/>
<output message="tns:PRPA_IN201306UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201306UV02"/>
</operation>
      <operation name="PDSupplier_QUQI_IN000003UV01_Continue">
<input message="tns:QUQI_IN000003UV01_Message" wsaw:Action="urn:hl7-
org:v3:QUQI_IN000003UV01_Continue"/>
<output message="tns:PRPA_IN201306UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201306UV02"/>
</operation>
      <operation name="PIXManager_QUQI_IN000003UV01_Cancel">
<input message="tns:QUQI_IN000003UV01_Message" wsaw:Action="urn:hl7-org:v3:
QUQI_IN000003UV01_Cancel"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
</operation>
  </portType>
```

3.47.4.2.3.1.2 Bindings

SOAP 1.2 binding:

```
…
  <binding name="PDSupplier_Binding_Soap12" type="PDSupplier_PortType">
    <wsoap12:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="PDSupplier_PRPA_IN201305UV02">
      <wsoap12:operation soapAction="urn:hl7-org:v3:PRPA_IN201305UV02"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
    <operation name="PDSupplier_QUQI_IN000003UV01_Continue">
      <wsoap12:operation soapAction="urn:hl7-
org:v3:QUQI_IN000003UV01_Continue"/>
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
    <operation name="PDSupplier_QUQI_IN000003UV01_Cancel">
      <wsoap12:operation soapAction="urn:hl7-org:v3:
QUQI_IN000003UV01_Cancel"/>
```



```
      <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
  </binding>
…
```

An informative WSDL for the PDSuplier Actor implementing the PDQV3 profile is available online on the IHE FTP site, see Appendix W.

3.47.4.2.3.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.47.4.3 Patient Demographics Query HL7V3 Continuation

3.47.4.3.1 Trigger Events

A Patient Demographics Consumer's need to get another set of matching records to a previously sent Patient Demographics query will trigger the Patient Demographics Query Continuation based on the following HL7 trigger event:

Query General Activate Query Continuation (QUQI_TE000003UV01)

An application, in the role of Query Placer, sends a query continuation message to request that the application return up to a specified number of matching records based on a previous demographics query.

3.47.4.3.2 Message Semantics

The Query continuation is supported by the Query Control Act Request Continue / Cancel (QUQI_MT000001UV01) message. The Patient Demographics Consumer actor shall generate the continuation message whenever it needs to receive another set of matching records based on the results of a previously sent query.

The receiver shall respond to the continuation request by sending the Patient Registry Find Candidates Response message (PRPA_MT201310), which uses the Application Level Acknowledgement transmission wrapper. This satisfies the requirements of original mode acknowledgment; no intermediate Accept Acknowledgement is to be sent.

If a cancellation request is sent by the Patient Demographics Consumer, then the receiver shall respond by sending an Accept Acknowledgement (see Appendix O for the descriptions of the Accept Acknowledgement transmission wrapper).

3.47.4.3.2.1 Major Components of the Query Continuation Message

This message contains no domain payload, it is built from a transmission and control act wrappers.

3.47.4.3.2.2 Message Information Model of the Query Continuation Message

Please see Appendix O for the description of the transmission and control act wrappers used by this message. The next section discusses the wrappers, and the specific constraints relevant to this transaction.

3.47.4.3.2.3 Control Act and Transmission Wrappers

Please see Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.47.4.3.2-1 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.47.4.3.2-1 Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000300UV01 – Send Application Acknowledgement	QUQI_MT000001UV01 – Query Control Act Request Continue / Cancel
The value of interactionId SHALL be set to QUQI_IN000003UV01 The value of processingModeCode SHALL be set to T The acceptAckCode SHALL be set to AL There SHALL be only one receiver Device The Acknowledgement.typeCode SHALL be set to AA The TargetMessage.id SHALL be the message ID of the immediately preceding Query response message	The trigger event code in ControlActProcess.code SHALL be set to PRPA_TE000003UV01 QueryContinuation.queryId SHALL be set to the original query identifier

The composite message schemas which describe the full payload of this interaction, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the schemas from the HL7 V3 2008 Normative Edition can be found at Edition2008/processable/multicacheschemas/QUQI_IN000003UV01.xsd)

3.47.4.1.2.4 Web Services Types and Messages

The Query Continuation message will be transmitted using Web Services, according to the requirements specified in Appendix V.

The following WSDL naming conventions SHALL apply:

```
query continuation    -> "QUQI_IN000003UV01_Message"
```

The following WSDL snippet describes the type for this message:

```
      …
 <types>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
```



```
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/QUQI_IN000003UV01.xsd"/>
<xsd:element name="QUQI_IN000003UV01"/>
</xsd:schema>
  </types>
…
```

The message is described by the following snippet:

```
      …
  <message name="QUQI_IN000003UV01_Message">
<part element="hl7:QUQI_IN000003UV01" name="Body"/>
  </message>
      …
```

The port types for the WSDL describing the Patient Demographics Service are described together with the expected actions of the actors which receive these messages in section ITI TF-2: 3.47.4.2.3.

3.47.4.3.3 Expected Actions

If a number of records is specified in the *initialQuantity* of the original quantity, the Patient Demographics Supplier Actor shall return an incremental response of that number of records when the number of matching records it finds exceeds the number of records specified. In subsequent query continuation messages, the Patient Demographics Consumer Actor may specify a different number of records to be returned from now on for this query session by populating the *continuationQuantity* attribute. In addition, the consumer may specify from which record the next set of matches should start by populating the *startResultNumber* attribute.

The Patient Demographics Supplier Actor shall always populate the *resultTotalQuantity*, *resultCurrentQuantity*, and *resultRemainingQuantity* in the *QueryAck* class. This information will indicate to the Patient Demographics Consumer Actor whether there are any remaining records to be returned in subsequent continuations.

The Patient Demographics Consumer shall indicate a query session cancellation by sending a continuation message, and setting the continuationQuantity attribute to 0, and setting the statusCode to "aborted". In such case, the Patient Demographics Supplier shall respond with an Accept Acknowledgement (as described in appendix O).

Sending a query cancellation message is optional. The Patient Demographics Supplier may simply not send any continuation messages once a record has been selected. How long the Patient Demographic Supplier retains query results (for incremental response) is an implementation decision and therefore beyond the scope of IHE.

3.47.4.3.3.1 Web Services Port Type and Binding Definitions

This information is part of the specification of the Patient Demographics Query response in section 3.47.4.2.3.1.

An informative WSDL for the PDSupplier Actor implementing the PDQV3 profile is available online on the IHE FTP site, see Appendix W.

3.47.4.2.3.2 Message Examples

Message examples can be found online on the IHE FTP site, see Appendix W.

3.47.5 Security Requirements

This transaction is generally used in profiles that require actors to be grouped with a Secure Node Actor as defined in the IHE Audit Trail and Node Authentication Integration profile. This use of the ATNA profile in an XDS Affinity Domain does not require a centralized XDS Affinity Domain Audit Repository Actor.

The use of ATNA along with XDS does require that each member of the XDS Affinity Domain have audit and security mechanisms in place. See ITI TF-1: Appendix G and ITI-TF-2: Appendix K.

The individual actors involved are often members of different secure domains. The data transfers between different secure domains need different protection than transfers within a secure domain and shall be encrypted with TLS authentication of both hosts.

Transfers within a single secure domain may choose to omit encryption if it is unnecessary, so it is recommended that the online transfer security mechanisms be configurable. Certificate management and exchange is defined as part of the XDS Affinity Domain business relationships and no IHE Integration Profile is specified at this time, see ITI TF-1: Appendix L.

Each transaction will result in audit records describing the transaction. Each secure domain has its own audit server to capture the records for the actors that are within that domain. Access to audit records by other enterprises within the XDS Affinity Domain is managed and controlled by the business relationship terms of the XDS Affinity Domain. There is no automatic IHE transaction for such access.

Change the existing Appendix E to Section E.1 in Appendix E, and adjust all sub-section numbers. The following is added as E.2.

Appendix E: IHE Requirements for Patient Identifier Data Types in HL7 Messages

E.2 HL7 V3 II Data Type

The Health Level Seven Standard Version 3 (HL7 V3) uses data type II to express an identifier that uniquely identifies a thing or object (see HL7 Version 3 Standard Data Types), including medical record number or other patient identifiers. We discuss here how IHE IT Infrastructure profiles the use of II data type to express patient identifiers in HL7 V3 messages and HL7 V3 CDA Document Templates defined or referenced in this Technical Framework. In the following text of this section, all requirements for the II data type are specified solely in the context of patient identifier expression.

Since IHE adds additional constraints to the II data type, requirements for populating its elements vary slightly, depending on what actor is originating a transaction (or create a CDA document), in which Patient ID is expressed. If the Patient Identifier Cross-reference Manager is the source of the Patient ID in a message, the requirements (specifically, with respect to populating the assigningAuthorityName elements) are more rigorous than otherwise.

The IHE IT Infrastructure Technical Framework adds constraints to the II data type for Patient ID expression in HL7 V3 messages or CDA documents, in order to maintain compatibility with the explicit relationship between a Patient ID Domain (assigning authority) and a Patient ID issued in the Domain present in the HL7 V2 CX data type. In HL7 V2 messages defined in the IHE IT Infrastructure Technical Framework, Patient ID is expressed in the form of an identifier value (CX.ID) issued in a domain (CX.AssigningAuthority) (see Section E.1). Even though HL7 V3 provides additional mechanisms for an explicit expression of the key concept of Patient ID Domain (via scoping organizations), the constraints added to the II data type in this section enable a seamless interoperability among HL7 V2 messages, HL7 V3 messages, as well as CDA documents, which may participate in the same IHE IT Infrastructure Integration Profile.

At the same time, it is also important to represent the RIM-based association between assigning authority and patient identifiers, which is expected by systems using the rich semantics of the RIM. In order to achieve that IHE imposes several constraints regarding patient IDs on the HL7 V3 models used in IHE transactions:

1. Identifiers for the patient are class attributes of a specific role, and never of the Person class of the patient.
2. When the Patient role is scoped by a Provider organization, only patient IDs assigned by the provider organization are allowed in the Patient class, the root element of the patient IDs shall match the root element of the provider organization ID, and the provider organization ID shall have no extension element.

3. When any other role associated with the Person class of the patient is scoped by an organization, the root element of the role IDs shall match the root element of the scoping organization ID, and the scoping organization ID shall have no extension element.
4. A receiver of an HL7 v3 message shall consider the IDs in all roles associated with the Person class of the patient as valid patient IDs.
5. A receiver of an HL7 v3 message shall not be required to maintain the various roles associated with the Person class of the patient, as long as, when becoming a sender, it can appropriately send all relevant patient IDs according to the requirements of a particular transaction.

E.2.1 Patient Identifier Cross-reference Manager Actor requirements

The Patient Identifier Cross-reference Manager Actor is expected to have access to complete information for a Patient ID value and its issuing Patient ID Domain (assigning authority). To facilitate interoperability, it is required that the Patient Identifier Cross-reference Manager Actor provide all this information in an instance of II the data type to express Patient ID. Table E-2 specifies the requirements of the II data type to the Patient Identifier Cross-reference Manager Actor.

Table E-2.1-1 Usage of HL7 V3 II Data Type by the PIX Manager Actor

Name	Type	Opt	Name
Root	OID	R	An ISO OID of the Patient ID Domain (assigning authority) that guarantees the global uniqueness of the patient identifier.
Extension	ST	R+	A character string as a unique identifier within the scope of the Patient ID Domain (assigning authority) represented by the identifier root.
assigningAuthorityName	ST	R+	A human readable name or mnemonic for the assigning authority. The Assigning Authority Name has no computational value. The purpose of a Assigning Authority Name is to assist an unaided human interpreter of an II value to interpret the authority. Note: no automated processing must depend on the assigning authority name to be present in any form.
Displayable	BL	O	Specifies if the identifier is intended for human display and data entry (displayable = true) as opposed to pure machine interoperation (displayable = false).

IHE specifies that the Patient Identifier Cross-reference Manager actor must populate both elements root and extension for Patient ID Domain and Patient ID value, respectively, and element root must be an ISO OID. If the same patient identifier is populated in a HL7 V2 message, element root and extension shall correspond to CX.4.2 and CX.1, respectively, and CX.4.3 shall be ISO (see Section E.1).

In addition, IHE requires that the Patient Identifier Cross-reference Manager actor populates element assigningAuthorityName. Though there is no additional requirement for the data type of this element than a text string in a HL7 V3 message or CDA document, it shall be the same value as populated in CX.4.1, if the actor participates in transactions of both HL7 V3 and HL7 V2 messages. In this case, element assigningAuthorityName shall contain a value of HL7 V2 data type IS, a code taken from user-defined Table 0363, *Assigning Authority*, see Section E.1.

E.2.2 Other actor requirements

The patient identifier information may also appear in HL7 V3 messages or CDA documents generated by other IHE Actors, including the Patient ID Cross-reference Consumer, the Patient Information Source, XDS Document Source. Table E-3 specifies requirements for these actors when populating a value of the II data type to express a patient identifier.

Table E-2.2-2: Usage of HL7 Data Type CX by other IHE Actors

Name	Type	Opt	Name
Root	OID	R	An ISO OID of the Patient ID Domain (assigning authority) that guarantees the global uniqueness of the patient identifier.
Extension	ST	R+	A character string as a unique identifier within the scope of the Patient ID Domain (assigning authority) represented by the identifier root.
assigningAuthorityName	ST	O	A human readable name or mnemonic for the assigning authority. The Assigning Authority Name has no computational value. The purpose of a Assigning Authority Name is to assist an unaided human interpreter of an II value to interpret the authority. Note: no automated processing must depend on the assigning authority name to be present in any form.
Displayable	BL	O	Specifies if the identifier is intended for human display and data entry (displayable = true) as opposed to pure machine interoperation (displayable = false).

These actors are not required to provide a value for element assigningAuthorityName. However, if they choose to provide a value of this element and generate both HL7 V2 messages and HL7 V3 messages or CDA documents, the same requirement for the Patient Identifier Cross-reference Manager (see Section E.2.1) applies.

E.2.3 Examples of use

The similar case of Metropolitan Medical Center in Section E.1.3 is used to provide HL7 V3 II data type for patient identifier expression in this section. Since element root of the II data type is always required and must be an ISO OID, the example case is adopted (compared to Section E.1.3).

E.2.3.1 Data sent by source systems

The source systems provide data to the Patient Identifier Cross-reference Manager. These data are sent in a Patient Identity Feed HL7 V3 transaction [ITI-44].

- Patient Smith's Social Security number is 999-99-4452. This number is assigned by the U.S. Social Security Administration, which uses a known ISO Object Identifier for issuing the Social Security Numbers, 2.16.840.1.113883.4.1.[1]
- Patient Smith's medical record number is 9990-99497. This number is assigned by Metropolitan Medical Center. The ISO OID of its medical record number domain is 1.2.xx.yyyyy.123.4567[2].
- Patient Smith's medical insurance number is 99998410. This number is assigned by MLH Life & Casualty Company, whose ISO OID for issuing insurance numbers is 1.2.xxx.yyyyy.987.6543[2]

The source system will include the patient identifier information of the II data type in a HL7 V3 message generated for the Patient Identity Feed transaction or Patient Identity Cross-Reference or Patient Demographics Query Request as shown in the following:

```
      <identifiedPerson>
                  <id  root="2.16.840.1.113883.4.1"  extension="999-99-4452"
/>
                  <id  root="1.2.xx.yyyyyy.123.4567"  extension="9990-99497"
/>
                  <id  root="1.2.xx.yyyyy.987.6543"  extension="99998410" />
                  :
            :
      </identifiedPerson>
```

E.2.3.2 Data sent by the Patient Identifier Cross-reference Manager

The Patient Identifier Cross-reference Manager implements HL7 V2 Table 0363, *Assigning Authority*, which includes the names of identifier domains (assigning authorities) used in the example of Section E.2.3.1:

- US Social Security Administration: USSSA
- Medical record number domain of Metropolitan Medical Center: 99MMC
- Insurance number domain of MLH Life & Casualty Company: 99MLHLIFE

To send the patient identifiers, the Patient Identifier Cross-reference Manager builds a HL7 V3 message as follows:

[1] As registered in the HL7 OID registry at http://www.hl7.org/oid/index.cfm

[2] These OIDs are fictitious, which is emphasized by the incorrect formatting using letters


```
      <identifiedPerson>
                  <id  root="2.16.840.1.113883.4.1"  extension="999-99-4452"
assigningAuthorityName=”USSSA”/>
                  <id  root="1.2.xx.yyyyyy.123.4567"  extension="9990-99497"
assigningAuthorityName=”99MMC”/>
                  <id  root="1.2.xx.yyyyy.987.6543"  extension="99998410"
assigningAuthorityName=”99MLHLIFE”/>
                        :
                  :
      </identifiedPerson>
```


Appendix O HL7 v3 Transmission and Trigger Event Control Act Wrappers

Add this section to describe the HL7v3 attributes in the Transmission and Trigger Event Control Act Wrappers.

An HL7 Version 3 Interaction is composed of 2 parts:

1. An "HL7 Transmission wrapper(s)" (always)
2. The "HL7 Transmission Content" (optional)

O.1 HL7 V3 Transmission Wrappers

An "HL7 Transmission wrapper" includes information needed by a sending application or message handling service to package and route the V3 interaction to the designated receiving application(s) and/or message handling service(s). This wrapper also includes attributes that influence the message handling behavior of the receiving application that is consistent with the HL7 defined messaging interaction for which the interaction has been created.

NOTE: These wrappers loosely equate to the MSH, MSA, and ERR segments in HL7 v2.5.

All HL7 Version 3 interactions have an appropriately configured "HL7 Transmission wrapper".

The HL7 Transmission Wrapper exists in two different forms:

1. The Message Transmission Wrapper. This wrapper contains zero or one instances of HL7 Transmission Content.
2. The Batch Transmission Wrapper. This wrapper contains zero or more Message Transmission Wrappers. Each Message Transmission Wrapper contains zero or one instances of HL7 Transmission Content. The Batch wrapper is occasionally used to group Message Transmissions.

An interaction that has the Message Transmission Wrapper as its "outermost" wrapper is commonly referred to as a "message" or a "message-based interaction". An interaction that has the Batch Transmission Wrapper as its "outermost" wrapper is commonly referred to as a "batch" or a "batch-based interaction".

For the Refined Message Information Models, Hierarchical Message Definitions and Message Type Table Views, refer to:
http://hl7.org/v3ballot2007may/html/domains/uvci/uvci_GenericMessageTransmission.htm

O.1.1 Send Message Payload Information Model (MCCI_RM000100IHE)

Below is the Message Information Model for this transmission wrapper. The purpose of the model is to describe the data elements relevant for use with IHE transactions based on HL7 V3 messages. It is a strict subset of the *Send Message Payload (MCCI_RM000100UV01)* RMIM,

which can be found on the HL7 V3 2008 Edition CD at: Edition2008/domains/uvci/editable/MCCI_RM000100UV.htm

The following restrictions were made on the original RMIM to arrive at the restricted model:

- The following optional class attributes have been omitted:
  - Message.profileId
  - Message.responseCode
  - Message.attachmentText
  - Sender.telecom
  - Receiver.telecom
  - Device.desc
  - Device.existenceTime
- The following optional classes have been omitted:
  - AttentionLine
  - RespondTo
  - LocatedEntity
  - scopedRole(Organization)

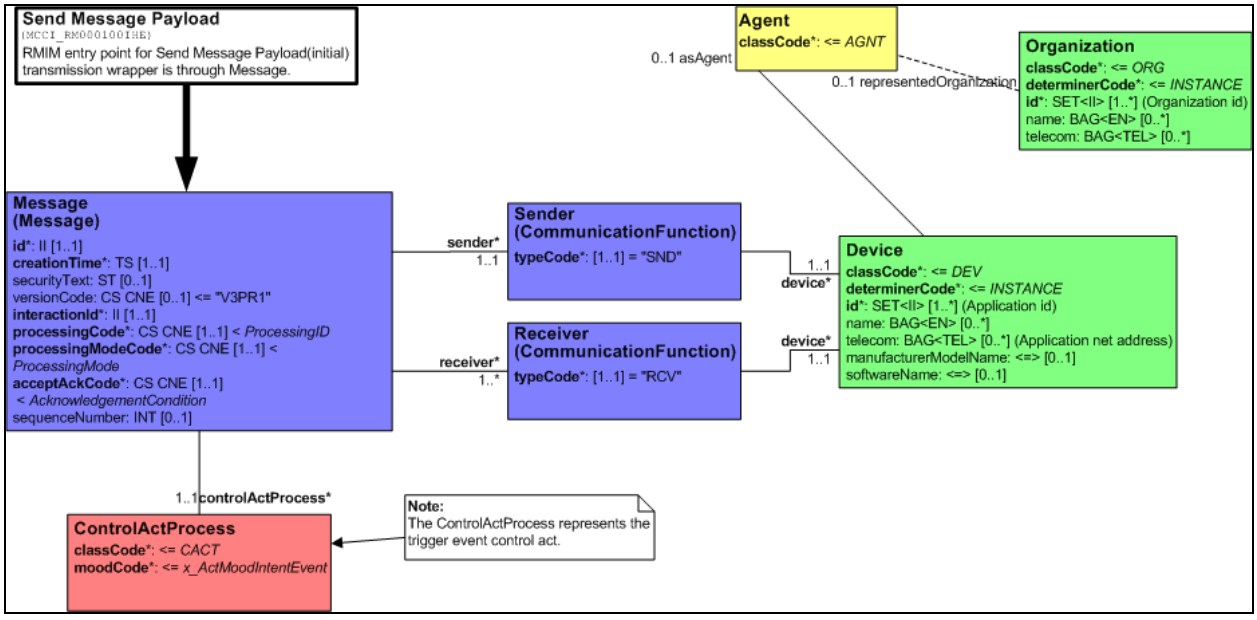


Figure O.1.1-1

The attributes of this model are described in the following table.

Table O.1.1-1

MCCI_HD000100IHE Send Message Payload	This HMD extract defines the transmission wrapper used to send HL7 V3 Message Payload. Derived from Figure O.1.1-1 (MCCI_RM000100IHE)
Message	The transmission focal class. According of the XML ITS, the root XML element representing this class will be the HL7 interaction ID
id [1..1] (M) Transmission (II)	Unique message ID
creationTime [1..1] (M) Transmission (TS)	Time stamp representing the time the message was created. Note that this is different from the time when the event which triggered the message occurred.
versionCode [0..1] Message (CS) {CNE:HL7StandardVersionCode, default= "V3PR1"}	The HL7 Version used in this message
interactionId [1..1] (M) Message (II)	The HL7 Interaction ID represented by this message
processingCode [1..1] (M) Message (CS) {CNE:ProcessingID}	This attribute defines whether the message is part of a production, training, or debugging system. Valid values are D (Debugging), T (Testing), P (Production) – see http://hl7.org/v3ballot2007may/html/infrastructure/vocabulary/ProcessingID.htm
processingModeCode [1..1] (M) Message (CS) {CNE:ProcessingMode}	This attribute defines whether the message is being sent in current processing, archive mode, initial load mode, restore from archive mode, etc. Valid values are A (Archive), T (Current processing), I (Initial Load), R (Restore from archive) – see http://hl7.org/v3ballot2007may/html/infrastructure/vocabulary/ProcessingMode.htm
acceptAckCode [1..1] (M) Message (CS) {CNE:AcknowledgementCondition}	Acknowledgement Condition codes describe the conditions under which accept or application level acknowledgements are required to be returned in response to the message send operation. Valid values are AL (Always), ER (Error/reject only), NE (Never).
sequenceNumber [0..1] Message (INT)	An optional sequence number.
Sender	
typeCode [1..1] (M) CommunicationFunction (CS) {CNE:SND, fixed value= "SND"}	Structural attribute; this is a "Sender" communication function
Receiver	
typeCode [1..1] (M) CommunicationFunction (CS) {CNE:RCV, fixed value= "RCV"}	Structural attribute; this is a "Receiver" communication function
Device	
classCode [1..1] (M) Entity (CS) {CNE:DEV, default= "DEV"}	Structural attribute; this entity is a "Device"
determinerCode [1..1] (M)	Structural attribute; this is a specific device

MCCI_HD000100IHE Send Message Payload	This HMD extract defines the transmission wrapper used to send HL7 V3 Message Payload. Derived from Figure O.1.1-1 (MCCI_RM000100IHE)
Entity (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	
id [1..*] (M) Entity (SET<II>)	The application ID(s). IHE restriction: id.root SHALL be an ISO OID, and id.extension SHALL NOT have a value.
name [0..*] Entity (BAG<EN>)	Optional Sender or Receiver name
telecom [0..*] Entity (BAG<TEL>)	Optional network address of the application
manufacturerModelName [0..1] Device (SC)	Optional application brand name
softwareName [0..1] Device (SC)	Optional software name
Agent	This role links the application with the organization to which it belongs
classCode [1..1] (M) Role (CS) {CNE:AGNT, default= "AGNT"}	Structural attribute; this is the Agent role
Organization	The sender or receiver organization
classCode [1..1] (M) Entity (CS) {CNE:ORG, default= "ORG"}	Structural attribute; this entity is an organization
determinerCode [1..1] (M) Entity (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific organization
id [1..*] (M) Entity (SET<II>)	The organization ID(s). IHE restriction: id.root SHALL be an ISO OID, and id.extension SHALL NOT have a value.
name [0..*] Entity (BAG<EN>)	Optional organization name
telecom [0..*] Entity (BAG<TEL>)	Optional telecommunications address
ControlActProcess	This is the stub where the focal class of the transmission content will be placed in the message.

O.1.2 Send Accept Acknowledgement Information Model (MCCI_RM000200IHE)

Below is the Message Information Model for the accept acknowledgment. The purpose of the model is to describe the data elements relevant for use with IHE transactions based on HL7 V3 messages. It is a strict subset of the *Send Accept Acknowledgement (MCCI_RM000200UV01)*

RMIM, which can be found on the HL7 V3 2008 Edition CD at: Edition2008/domains/uvci/editable/MCCI_RM000200UV.htm

The following restrictions were made on the original RMIM to arrive at the restricted model:

- The following optional class attributes have been omitted:
  - Message.profileId
  - Message.attachmentText
  - Sender.telecom
  - Receiver.telecom
  - Device.desc
  - Device.existenceTime
  - Acknowledgement.messageWaitingNumber
  - Acknowledgement.messageWaitingPriorityCode
- The following optional classes have been omitted:
  - AttentionLine
  - RespondTo
  - LocatedEntity
  - scopedRole(Organization)
- The following constraints have been applied:
  - Message.acceptAckCode is fixed to NE (don't ack an ack)
  - Acknowledgment is a required class

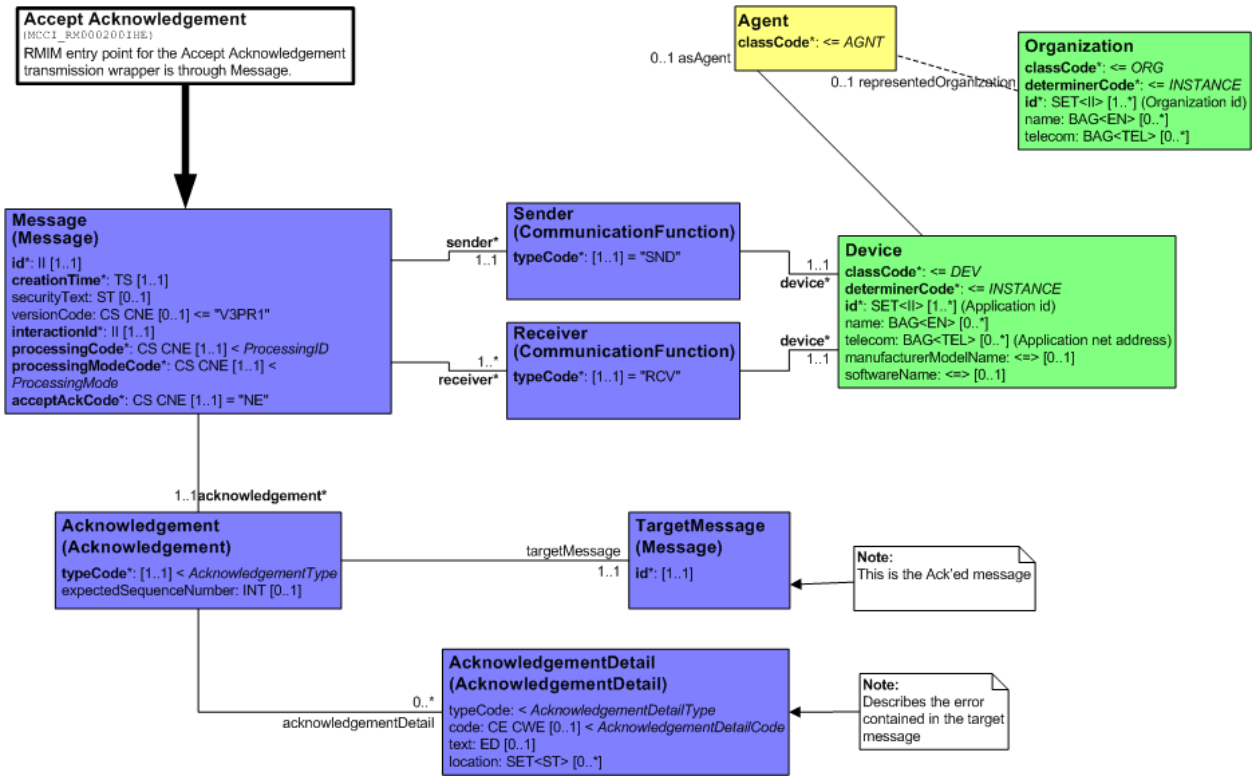


Figure O.1.2-1

The attributes of this model are described in the following table:

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Table O.1.2-1

MCCI_HD000200IHE Send Accept Acknowledgement	This HMD extract defines the transmission wrapper used to send HL7 V3 Accept Acknowledgement. Derived from Figure O.1.2-1 (MCCI_RM000200IHE)
Message	The transmission focal class. According of the XML ITS, the root XML element representing this class will be the HL7 interaction ID
id [1..1] (M) Transmission (II)	Unique message ID of the acknowledgment
creationTime [1..1] (M) Transmission (TS)	Time stamp representing the time the message was created. Note that this is different from the time when the event which triggered the message occurred.
versionCode [0..1] Message (CS) {CNE:HL7StandardVersionCode, default= "V3PR1"}	The HL7 Version used in this message
interactionId [1..1] (M) Message (II)	The HL7 Interaction ID represented by this message
processingCode [1..1] (M)	This attribute defines whether the message is part of a production, training, or debugging

MCCI_HD000200IHE Send Accept Acknowledgement	This HMD extract defines the transmission wrapper used to send HL7 V3 Accept Acknowledgement. Derived from Figure O.1.2-1 (MCCI_RM000200IHE)
Message (CS) {CNE:ProcessingID}	system. Valid values are D (Debugging), T (Testing), P (Production) – see http://hl7.org/v3ballot2007may/html/infrastructure/vocabulary/ProcessingID.htm
processingModeCode [1..1] (M) Message (CS) {CNE:ProcessingMode}	This attribute defines whether the message is being sent in current processing, archive mode, initial load mode, restore from archive mode, etc. Valid values are A (Archive), T (Current processing), I (Initial Load), R (Restore from archive) – see http://hl7.org/v3ballot2007may/html/infrastructure/vocabulary/ProcessingMode.htm
acceptAckCode [1..1] (M) Message (CS) {CNE:AcknowledgementCondition, fixed="NE"}	Acknowledgement Condition codes describe the conditions under which accept or application level acknowledgements are required to be returned in response to the message send operation. Fixed to NE (Never) as this is an acknowledgment itself.
Sender	The sender is the one which is acknowledging the receipt of a message
typeCode [1..1] (M) CommunicationFunction (CS) {CNE:SND, fixed value= "SND"}	Structural attribute; this is a "Sender" communication function
Receiver	The receiver in the one which sent the message being acknowledged
typeCode [1..1] (M) CommunicationFunction (CS) {CNE:RCV, fixed value= "RCV"}	Structural attribute; this is a "Receiver" communication function
Device	
classCode [1..1] (M) Entity (CS) {CNE:DEV, default= "DEV"}	Structural attribute; this entity is a "Device"
determinerCode [1..1] (M) Entity (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific device
id [1..*] (M) Entity (SET<II>)	The application ID(s). IHE restriction: id.root SHALL be an ISO OID, and id.extension SHALL NOT have a value.
name [0..*] Entity (BAG<EN>)	Optional Sender or Receiver name
telecom [0..*] Entity (BAG<TEL>)	Optional network address of the application
manufacturerModelName [0..1] Device (SC)	Optional application brand name
softwareName [0..1] Device (SC)	Optional software name
Agent	This role links the application with the organization to which it belongs
classCode [1..1] (M) Role (CS) {CNE:AGNT, default= "AGNT"}	Structural attribute; this is the Agent role

MCCI_HD000200IHE Send Accept Acknowledgement	This HMD extract defines the transmission wrapper used to send HL7 V3 Accept Acknowledgement. Derived from Figure O.1.2-1 (MCCI_RM000200IHE)
Organization	The sender or receiver organization
classCode [1..1] (M) Entity (CS) {CNE:ORG, default= "ORG"}	Structural attribute; this entity is an organization
determinerCode [1..1] (M) Entity (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific organization
id [1..*] (M) Entity (SET<II>)	The organization ID(s). IHE restriction: id.root SHALL be an ISO OID, and id.extension SHALL NOT have a value.
name [0..*] Entity (BAG<EN>)	Optional organization name
telecom [0..*] Entity (BAG<TEL>)	Optional telecommunications address
Acknowledgement	
typeCode [1..1] (M) Acknowledgement (CS) {CNE:AcknowledgementType}	The acknowledgement type. Since this is an Accept Acknowledgement, the possible values are CA (Accept Acknowledgement Commit Accept), CE (Accept Acknowledgement Commit Error), or CR (Accept Acknowledgement Commit Reject).
expectedSequenceNumber [0..1] Acknowledgement (INT)	
TargetMessage	The message being acknowledged
id [1..1] (M) Transmission (II)	Unique message ID of the message being acknowledged
AcknowledgementDetail	Describes the error(s) contained in the target message
typeCode [0..1] AcknowledgementDetail (CS) {CNE:AcknowledgementDetailType}	Optional detail type indicating if the problem was an error (E), a warning (W), or informational (I).
code [0..1] AcknowledgementDetail (CE) {CWE:AcknowledgementDetailCode}	An optional coded value, representing the acknowledgement detail being transmitted.
text [0..1] AcknowledgementDetail (ED)	Optional description of the acknowledgement detail being transmitted
location [0..*] AcknowledgementDetail (SET<ST>)	The location within the message where the problem occurred. It is recommended that this is represented via an XPath expression.

The Accept Acknowledgement does not contain any additional content defined elsewhere. It will be transmitted using Web Services, according to the requirements specified in Appendix V.

The following WSDL naming conventions SHALL apply:


```
accept acknowledgment    -> "MCCI_IN000002UV01_Message"
```

The following WSDL snippet describes the type for this message:

```
…
 <types>
      <xsd:schema elementFormDefault="qualified"
targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
            <!-- Include the message schema -->
            <xsd:import namespace="urn:hl7-org:v3"
      schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/MCCI_IN0
      00002UV01.xsd"/>
            <xsd:element name="MCCI_IN000002UV01"/>
      </xsd:schema>
  </types>
…
```

The message is described by the following snippet:

```
…
  <message name="MCCI_IN000002UV01_Message">
      <part element="hl7:MCCI_IN000002UV01" name="Body"/>
  </message>
…
```

Various WSDL examples describing IHE transactions as web services are found in the transaction definitions in ITI TF-2, together with the expected actions of the actors which provide these services.

O.1.3 Send Application Acknowledgement Information Model (MCCI_RM000300IHE)

Below is the Message Information Model for the application acknowledgment. The purpose of the model is to describe the data elements relevant for use with IHE transactions based on HL7 V3 messages. It is a strict subset of the *Send Application Acknowledgement (MCCI_RM000300UV01)* RMIM, which can be found on the HL7 V3 2008 Edition CD at: Edition2008/domains/uvci/editable/MCCI_RM000300UV.htm

The following restrictions were made on the original RMIM to arrive at the restricted model:

- The following optional class attributes have been omitted:
  - Message.profileId
  - Message.attachmentText
  - Sender.telecom
  - Receiver.telecom
  - Device.desc
  - Device.existenceTime

- Acknowledgement.messageWaitingNumber
- Acknowledgement.messageWaitingPriorityCode
- The following optional classes have been omitted:
  - AttentionLine
  - RespondTo
  - LocatedEntity
  - scopedRole(Organization)
- The following constraints have been applied:
  - Message.acceptAckCode is fixed to NE (don't ack an ack)
  - Acknowledgment is a required class

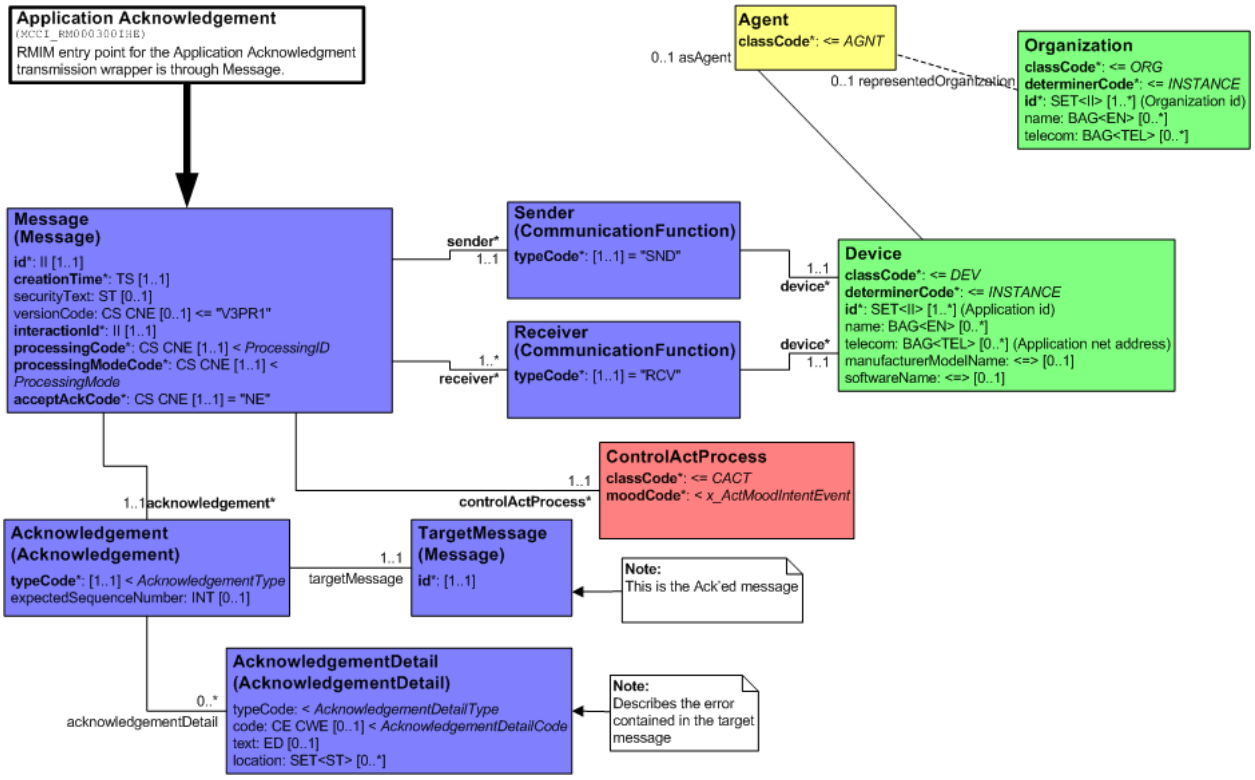


Figure O.1.3-2

The attributes of this model are described in the following table:

Table O.1.3-2

MCCI_HD000300IHE Send Application Acknowledgement	This HMD extract defines the transmission wrapper used to send HL7 V3 Application Acknowledgement. Derived from Figure O.1.3-1 (MCCI_RM000300IHE)
Message	The transmission focal class. According of the XML ITS, the root XML element representing this class will be the HL7 interaction ID
id [1..1] (M) Transmission (II)	Unique message ID of the acknowledgment
creationTime [1..1] (M) Transmission (TS)	Time stamp representing the time the message was created. Note that this is different from the time when the event which triggered the message occurred.
versionCode [0..1] Message (CS) {CNE:HL7StandardVersionCode, default= "V3PR1"}	The HL7 Version used in this message
interactionId [1..1] (M) Message (II)	The HL7 Interaction ID represented by this message
processingCode [1..1] (M) Message (CS) {CNE:ProcessingID}	This attribute defines whether the message is part of a production, training, or debugging system. Valid values are D (Debugging), T (Testing), P (Production) – see http://hl7.org/v3ballot2007may/html/infrastructure/vocabulary/ProcessingID.htm
processingModeCode [1..1] (M) Message (CS) {CNE:ProcessingMode}	This attribute defines whether the message is being sent in current processing, archive mode, initial load mode, restore from archive mode, etc. Valid values are A (Archive), T (Current processing), I (Initial Load), R (Restore from archive) – see http://hl7.org/v3ballot2007may/html/infrastructure/vocabulary/ProcessingMode.htm
acceptAckCode [1..1] (M) Message (CS) {CNE:AcknowledgementCondition, fixed="NE"}	Acknowledgement Condition codes describe the conditions under which accept or application level acknowledgements are required to be returned in response to the message send operation. Fixed to NE (Never) as this is an acknowledgment itself.
Sender	The sender is the one which is acknowledging the receipt of a message
typeCode [1..1] (M) CommunicationFunction (CS) {CNE:SND, fixed value= "SND"}	Structural attribute; this is a "Sender" communication function
Receiver	The receiver in the one which sent the message being acknowledged
typeCode [1..1] (M) CommunicationFunction (CS) {CNE:RCV, fixed value= "RCV"}	Structural attribute; this is a "Receiver" communication function
Device	
classCode [1..1] (M) Entity (CS) {CNE:DEV, default= "DEV"}	Structural attribute; this entity is a "Device"
determinerCode [1..1] (M) Entity (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific device

MCCI_HD000300IHE Send Application Acknowledgement	This HMD extract defines the transmission wrapper used to send HL7 V3 Application Acknowledgement. Derived from Figure O.1.3-1 (MCCI_RM000300IHE)
id [1..*] (M) Entity (SET<II>)	The application ID(s). IHE restriction: id.root SHALL be an ISO OID, and id.extension SHALL NOT have a value.
name [0..*] Entity (BAG<EN>)	Optional Sender or Receiver name
telecom [0..*] Entity (BAG<TEL>)	Optional network address of the application
manufacturerModelName [0..1] Device (SC)	Optional application brand name
softwareName [0..1] Device (SC)	Optional software name
Agent	This role links the application with the organization to which it belongs
classCode [1..1] (M) Role (CS) {CNE:AGNT, default= "AGNT"}	Structural attribute; this is the Agent role
Organization	The sender or receiver organization
classCode [1..1] (M) Entity (CS) {CNE:ORG, default= "ORG"}	Structural attribute; this entity is an organization
determinerCode [1..1] (M) Entity (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific organization
id [1..*] (M) Entity (SET<II>)	The organization ID(s). IHE restriction: id.root SHALL be an ISO OID, and id.extension SHALL NOT have a value.
name [0..*] Entity (BAG<EN>)	Optional organization name
telecom [0..*] Entity (BAG<TEL>)	Optional telecommunications address
Acknowledgement	
typeCode [1..1] (M) Acknowledgement (CS) {CNE:AcknowledgementType}	The acknowledgement type. Since this is an Accept Acknowledgement, the possible values are CA (Accept Acknowledgement Commit Accept), CE (Accept Acknowledgement Commit Error), or CR (Accept Acknowledgement Commit Reject).
expectedSequenceNumber [0..1] Acknowledgement (INT)	
TargetMessage	The message being acknowledged
id [1..1] (M) Transmission (II)	Unique message ID of the message being acknowledged

MCCI_HD000300IHE Send Application Acknowledgement	This HMD extract defines the transmission wrapper used to send HL7 V3 Application Acknowledgement. Derived from Figure O.1.3-1 (MCCI_RM000300IHE)
AcknowledgementDetail	Describes the error(s) contained in the target message
typeCode [0..1] AcknowledgementDetail (CS) {CNE:AcknowledgementDetailType}	Optional detail type indicating if the problem was an error (E), a warning (W), or informational (I).
code [0..1] AcknowledgementDetail (CE) {CWE:AcknowledgementDetailCode}	An optional coded value, representing the acknowledgement detail being transmitted.
text [0..1] AcknowledgementDetail (ED)	Optional description of the acknowledgement detail being transmitted
location [0..*] AcknowledgementDetail (SET<ST>)	The location within the message where the problem occurred. It is recommended that this is represented via an XPath expression.
ControlActProcess	The transmission content sent as part of the application acknowledgement.

O.2 HL7 V3 Transmission Content

The HL7 Transmission Content is comprised of 2 parts:

1. A "Trigger Event Control Act" (required for all messages except accept-level acknowledgements, for which it is not permitted)
2. The "HL7 Domain Content" specified by an HL7 domain specific technical committee (required for each Trigger Event Control Act)

The "Trigger Event Control Act" contains administrative information related to the "controlled act" which is being communicated as a messaging interaction. It is also the part of HL7 messages that can convey status or commands for logical operations being coordinated between healthcare applications, e.g., the coordination of query specification/query response interactions and registry act interactions.

NOTE: The Trigger Event Control Act loosely equates to the EVN segment in HL7 v2.5.

The "HL7 Domain Content" is the primary domain content of the messaging interaction (when it is present). It contains domain specific content that is specified by an HL7 technical committee to satisfy a use case driven requirement for an HL7 messaging interaction. If an interaction contains HL7 Domain Content, then it also contains a Trigger Event Control Act.

For the Refined Message Information Models, Hierarchical Message Definitions and Message Type Table Views, refer to the HL7 V3 2008 Edition CD at: Edition2008/domains/uvai/uvai_TriggerEventControlAct.htm and Edition2008/domains/uvmi/uvmi_MasterFile-Registry.htm

O.2.1 Master File/Registry Event Notification Control Act (Role Subject) Information Model (MFMI_MT700701IHE)

Below is the Message Information Model for this control act wrapper. The purpose of the model is to describe the data elements relevant for use with IHE transactions based on HL7 V3 messages. It is a strict subset of the *Master File / Registry Event Notification (MFMI_RM700700UV01)* RMIM, which can be found on the HL7 V3 2008 Edition CD at: Edition2008/domains/uvmi/editable/MFMI_RM700700UV.htm

The following restrictions were made on the original RMIM to arrive at the restricted model:

- The following optional class attributes have been omitted:
  - ControlActProcess.text
  - ControlActProcess.priorityCode
  - ControlActProcess.reasonCode
- All participations related to the ControlActProcess have been omitted
- The reasonOf act relationship has been omitted
- The following act relationships to the RegistrationEvent have been omitted:
  - inFullfilmentOf
  - definition
  - subject2

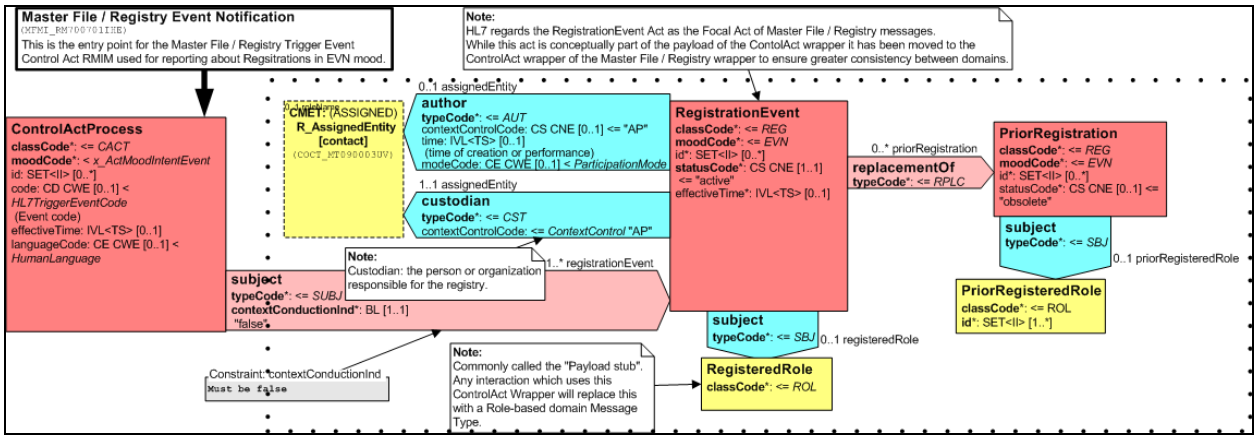


Figure O.2.1-1

The attributes of this model are described in the following table.

Table O.2.1-1

MFMI_HD700701IHE Master File / Registry Event Notification (Role Subject)	This HMD extract defines the control act wrapper used to send HL7 V3 master file or registry messages with the subject being a role. Derived from Figure O.2.1-1 (MFMI_RM700701IHE)
Control Act Process	The entry point from the transmission wrapper
classCode [1..1] (M) Act (CS) {CNE:CACT, default= "CACT"}	Structural attribute; this is a Control Act
moodCode [1..1] (M) Act (CS) {CNE:x_ActMoodIntentEvent}	Structural attribute; possible values are INT (intent), RQO (request), EVN (event, occurrence), PRP (proposal), RMD (recommendation), APT (appointment), ARQ (appointment request), or PRMS (promise).
id [0..*] Act (SET<II>)	Optional Control Act ID
code [0..1] Act (CD) {CWE:HL7TriggerEventCode}	The HL7 Trigger Event code
effectiveTime [0..1] Act (IVL<TS>)	Optional time stamp or time interval indication when the ControlActProcess took place
languageCode [0..1] Act (CE) {CWE:HumanLanguage}	Optional language code
subject	Act relationship linking the ControlActProcess to the Registration event
typeCode [1..1] (M) ActRelationship (CS) {CNE:SUBJ, fixed value= "SUBJ"}	Structural attribute; this act relationship is “Subject”
contextConductionInd [1..1] (M) ActRelationship (BL){default= "false"}	The context conduction Indicator value in this control act wrapper SHALL be ‘false’
RegistrationEvent	Although this part of the model has been included in a specialization of the Trigger Event Control Act wrapper for reasons of consistency, it is conceptually part of the payload of a HL7 interaction. The Focal Act of all interactions that use this model is the RegistrationEvent act, not the subject Role.
classCode [1..1] (M) Act (CS) {CNE:REG, fixed value= "REG"}	Structural attribute; this act is a registration
moodCode [1..1] (M) Act (CS) {CNE:EVN, fixed value= "EVN"}	Structural attribute; this is an occurrence of the act
id [0..*] Act (SET<II>)	Optional registration event identifier(s).
statusCode [1..1] (M) Act (CS) {CNE:ActStatus, default= "active"}	The status of the registration event. The default is “active”.
effectiveTime [0..1] Act (IVL<TS>)	Optional time stamp or interval indicating when the registration event took place. IHE constraint: it this attribute is valued, the author.time SHALL be valued with the same

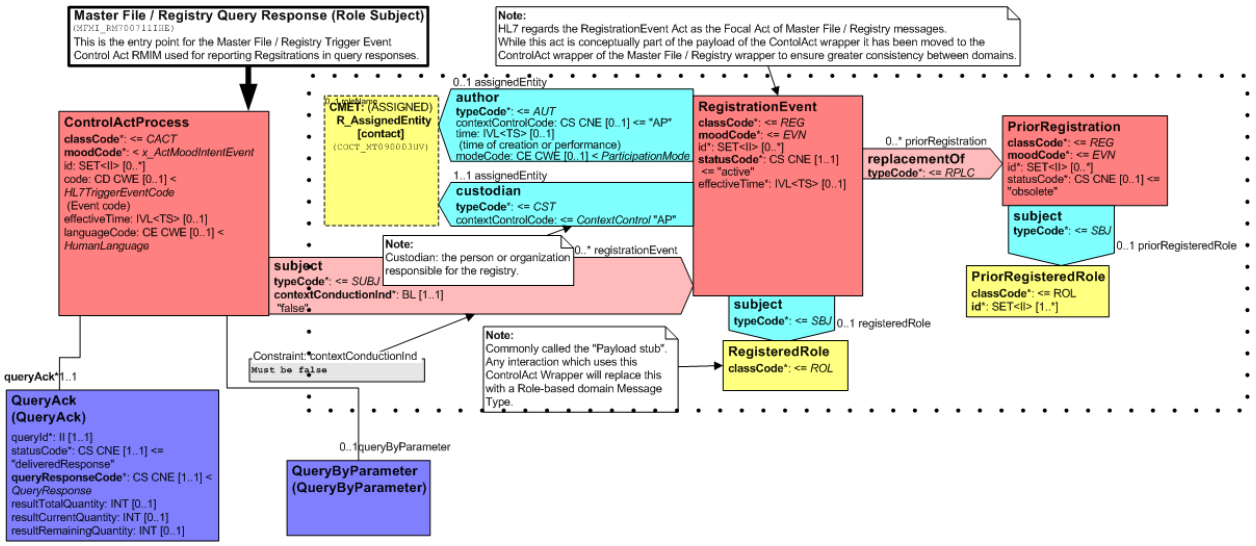
MFMI_HD700701IHE Master File / Registry Event Notification (Role Subject)	This HMD extract defines the control act wrapper used to send HL7 V3 master file or registry messages with the subject being a role. Derived from Figure O.2.1-1 (MFMI_RM700701IHE)
	time expression.
subject	The participation linking the Registration Event to the payload focal role (usually Patient).
typeCode [1..1] (M) Participation (CS) {CNE:SBJ, default= "SBJ"}	Structural attribute; this is a "subject" participation
RegisteredRole	The payload stub. Replaced by a role-based payload from the domain content
author	This participation represents the entity which authored the registration. The Assigned Entity SHOULD be a person, MAY be a device or an organization, and SHALL NOT be a non-person living subject.
typeCode [1..1] (M) Participation (CS) {CNE:AUT, fixed value= "AUT"}	Structural attribute; this participation is of type “Author”
contextControlCode [0..1] Participation (CS) {CNE:ContextControl, default= "AP"}	Optional contextControlCode, the default is “AP”
time [0..1] Participation (IVL<TS>)	Time of creation or performance. IHE constraint: If this attribute is valued, the RegistrationEvent.effectiveTime SHALL be valued with the same time expression
modeCode [0..1] Participation (CE) {CWE:ParticipationMode}	This is the optional participation mode
custodian	The application or organization responsible for the patient identity source. This participation is required. IHE restriction: the assigned entity SHALL be either an organization or a device.
typeCode [1..1] (M) Participation (CS) {CNE:CST, fixed value= "CST"}	Structural attribute; this participation id of type “Custodian”
contextControlCode [0..1] Participation (CS) {CNE:ContextControl, default= "AP"}	Optional contextControlCode, the default is “AP”
ReplacementOf	The relationship between the current Registration Event and other registration events which are being replaced by the current one.
typeCode [1..1] (M) ActRelationship (CS) {CNE:RPLC, fixed value= "RPLC"}	Structural attribute; this is a “Replace” relationship
PriorRegistration	The previous registration event, which is being replaced by the current one. An example is the Resolve Duplicates message, where the prior registration contains the subject role with the identifiers which have been merged into the role of the current registration event.
classCode [1..1] (M)	Structural attribute; this act is a registration

MFMI_HD700701IHE Master File / Registry Event Notification (Role Subject)	This HMD extract defines the control act wrapper used to send HL7 V3 master file or registry messages with the subject being a role. Derived from Figure O.2.1-1 (MFMI_RM700701IHE)
Act (CS) {CNE:REG, fixed value= "REG"}	
moodCode [1..1] (M) Act (CS) {CNE:EVN, fixed value= "EVN"}	Structural attribute; this is an occurrence of the act
id [0..*] Act (SET<II>)	Optional prior registration event identifier(s).
statusCode [1..1] (M) Act (CS) {CNE:ActStatus, default= "obsolete"}	The status of the registration event. The default is "obsolete".
PriorRegisteredRole	The role subject of the prior registration.
classCode [1..1] (M) Act (CS) {CNE:ROL, fixed value= "ROL"}	Structural attribute; this class is a role
id [1..*] (M) Role (SET<II>)	Identifiers of the role subject of the prior registration. Usually contains the merged ID of a patient after duplicate resolution.

O.2.2 Master File/Registry Query Response Control Act (Role Subject) Information Model (MFMI_MT700711IHE)

Below is the Message Information Model for this control act wrapper. The purpose of the model is to describe the data elements relevant for use with IHE transactions based on HL7 V3 messages. It is a strict subset of the *Master File / Registry Query Response (MFMI_RM700710UV01)* RMIM, which can be found on the HL7 V3 2008 Edition CD at: Edition2008/domains/uvmi/editable/MFMI_RM700710UV.htm. The following restrictions were made on the original RMIM to arrive at the restricted model:

- The following optional class attributes have been omitted:
  - ControlActProcess.text
  - ControlActProcess.priorityCode
  - ControlActProcess.reasonCode
- All participations related to the ControlActProcess have been omitted
- The reasonOf act relationship has been omitted
- The following act relationships to the RegistrationEvent have been omitted:
  - inFullfilmentOf
  - definition
  - subject2



2390 **Figure O.2.2-2**

The attributes of this model are described in the following table.

Table O.2.2-2

MFMI_HD700711IHE Master File / Registry Event Notification (Role Subject)	This HMD extract defines the control act wrapper used to send HL7 V3 master file or registry query responses with the subject being a role. Derived from Figure O.2.2-1 (MFMI_RM700711IHE)
Control Act Process	The entry point from the transmission wrapper
classCode [1..1] (M) Act (CS) {CNE:CACT, default= "CACT"}	Structural attribute; this is a Control Act
moodCode [1..1] (M) Act (CS) {CNE:x_ActMoodIntentEvent}	Structural attribute; possible values are INT (intent), RQO (request), EVN (event, occurrence), PRP (proposal), RMD (recommendation), APT (appointment), ARQ (appointment request), or PRMS (promise).
id [0..*] Act (SET<II>)	Optional Control Act ID
code [0..1] Act (CD) {CWE:HL7TriggerEventCode}	The HL7 Trigger Event code
effectiveTime [0..1] Act (IVL<TS>)	Optional time stamp or time interval indication when the ControlActProcess took place
languageCode [0..1] Act (CE) {CWE:HumanLanguage}	Optional language code
subject	Act relationship linking the ControlActProcess to the Registration event. Note that in the event of a query for which there are no results, the ControlActProcess will still be returned, but no RegistrationEvent will be present.
typeCode [1..1] (M)	Structural attribute; this act relationship is “Subject”

MFMI_HD700711IHE Master File / Registry Event Notification (Role Subject)	This HMD extract defines the control act wrapper used to send HL7 V3 master file or registry query responses with the subject being a role. Derived from Figure O.2.2-1 (MFMI_RM700711IHE)
ActRelationship (CS) {CNE:SUBJ, fixed value= "SUBJ"}	
contextConductionInd [1..1] (M) ActRelationship (BL){default= "false"}	The context conduction Indicator value in this control act wrapper SHALL be 'false'
RegistrationEvent	Although this part of the model has been included in a specialization of the Trigger Event Control Act wrapper for reasons of consistency, it is conceptually part of the payload of a HL7 interaction. The Focal Act of all interactions that use this model is the RegistrationEvent act, not the subject Role. In cases where a query response has no records to return, there will be no RegistrationEvent being returned.
classCode [1..1] (M) Act (CS) {CNE:REG, fixed value= "REG"}	Structural attribute; this act is a registration
moodCode [1..1] (M) Act (CS) {CNE:EVN, fixed value= "EVN"}	Structural attribute; this is an occurrence of the act
id [0..*] Act (SET<II>)	Optional registration event identifier(s).
statusCode [1..1] (M) Act (CS) {CNE:ActStatus, default= "active"}	The status of the registration event. The default is "active".
effectiveTime [0..1] Act (IVL<TS>)	Optional time stamp or interval indicating when the registration event took place. IHE constraint: it this attribute is valued, the author.time SHALL be valued with the same time expression.
subject	The participation linking the Registration Event to the payload focal role (usually Patient).
typeCode [1..1] (M) Participation (CS) {CNE:SBJ, default= "SBJ"}	Structural attribute; this is a "subject" participation
RegisteredRole	The payload stub. Replaced by a role-based payload from the domain content
author	This participation represents the entity which authored the registration. The Assigned Entity SHOULD be a person, MAY be a device or an organization, and SHALL NOT be a non-person living subject.
typeCode [1..1] (M) Participation (CS) {CNE:AUT, fixed value= "AUT"}	Structural attribute; this participation is of type "Author"
contextControlCode [0..1] Participation (CS) {CNE:ContextControl, default= "AP"}	Optional contextControlCode, the default is "AP"
time [0..1]	Time of creation or performance. IHE constraint: If this attribute is valued, the

MFMI_HD700711IHE Master File / Registry Event Notification (Role Subject)	This HMD extract defines the control act wrapper used to send HL7 V3 master file or registry query responses with the subject being a role. Derived from Figure O.2.2-1 (MFMI_RM700711IHE)
Participation (IVL<TS>)	RegistrationEvent.effectiveTime SHALL be valued with the same time expression
modeCode [0..1] Participation (CE) {CWE:ParticipationMode}	This is the optional participation mode
custodian	The application or organization responsible for the patient identity source. This participation is required. IHE restriction: the assigned entity SHALL be either an organization or a device.
typeCode [1..1] (M) Participation (CS) {CNE:CST, fixed value= "CST"}	Structural attribute; this participation id of type "Custodian"
contextControlCode [0..1] Participation (CS) {CNE:ContextControl, default= "AP"}	Optional contextControlCode, the default is "AP"
ReplacementOf	The relationship between the current Registration Event and other registration events which are being replaced by the current one.
typeCode [1..1] (M) ActRelationship (CS) {CNE:RPLC, fixed value= "RPLC"}	Structural attribute; this is a "Replace" relationship
PriorRegistration	The previous registration event, which is being replaced by the current one. An example is the Resolve Duplicates message, where the prior registration contains the subject role with the identifiers which have been merged into the role of the current registration event.
classCode [1..1] (M) Act (CS) {CNE:REG, fixed value= "REG"}	Structural attribute; this act is a registration
moodCode [1..1] (M) Act (CS) {CNE:EVN, fixed value= "EVN"}	Structural attribute; this is an occurrence of the act
id [0..*] Act (SET<II>)	Optional prior registration event identifier(s).
statusCode [1..1] (M) Act (CS) {CNE:ActStatus, default= "obsolete"}	The status of the registration event. The default is "obsolete".
PriorRegisteredRole	The role subject of the prior registration.
classCode [1..1] (M) Act (CS) {CNE:ROL, fixed value= "ROL"}	Structural attribute; this class is a role
id [1..*] (M) Role (SET<II>)	Identifiers of the role subject of the prior registration. Usually contains the merged ID of a patient after duplicate resolution.

MFMI_HD700711IHE Master File / Registry Event Notification (Role Subject)	This HMD extract defines the control act wrapper used to send HL7 V3 master file or registry query responses with the subject being a role. Derived from Figure O.2.2-1 (MFMI_RM700711IHE)
QueryAck	Information about the query to which this message is a response
queryId [1..1] (R) QueryEvent (II)	The query ID to which this message is a response.
statusCode [1..1] (R) QueryEvent (CS) {CNE:QueryStatusCode, default= "deliveredResponse"}	The status of the query event. The default is “deliveredResponse”. Possible values are "aborted", "executing", "new", "waitContinuedQueryResponse"
queryResponseCode [1..1] (M) QueryAck (CS) {CNE:QueryResponse}	Code representing the content of the response. Possible values are AE (application error), OK (data found), NF (no data found), QE (query parameter error).
resultTotalQuantity [0..1] QueryAck (INT)	Total number of results found.
resultCurrentQuantity [0..1] QueryAck (INT)	The number of results in this message.
resultRemainingQuantity [0..1] QueryAck (INT)	The number of results not transmitted yet.
queryByParameter	The stub to an optional copy of the Query By Parameter payload of the original query.

O.2.3 Query Control Act Request: Query By Parameter Information Model (QUQI_MT021001IHE)

Below is the Message Information Model for this control act wrapper. The purpose of the model is to describe the data elements relevant for use with IHE transactions based on HL7 V3 messages. It is a strict subset of the *Query Specification Control Act: Query By Parameter (QUQI_RM021000UV01)* RMIM, which can be found on the HL7 V3 2008 Edition CD at: Edition2008/domains/uvqi/editable/QUQI_RM021000UV.htm. The following restrictions were made on the original RMIM to arrive at the restricted model:

- The following optional class attributes have been omitted:
  - ControlActProcess.text
  - ControlActProcess.priorityCode
  - ControlActProcess.reasonCode
- The following participations related to the ControlActProcess have been omitted:
  - overseer
  - dataEnterer
  - informationRecipient
- The reasonOf act relationship has been omitted

2410

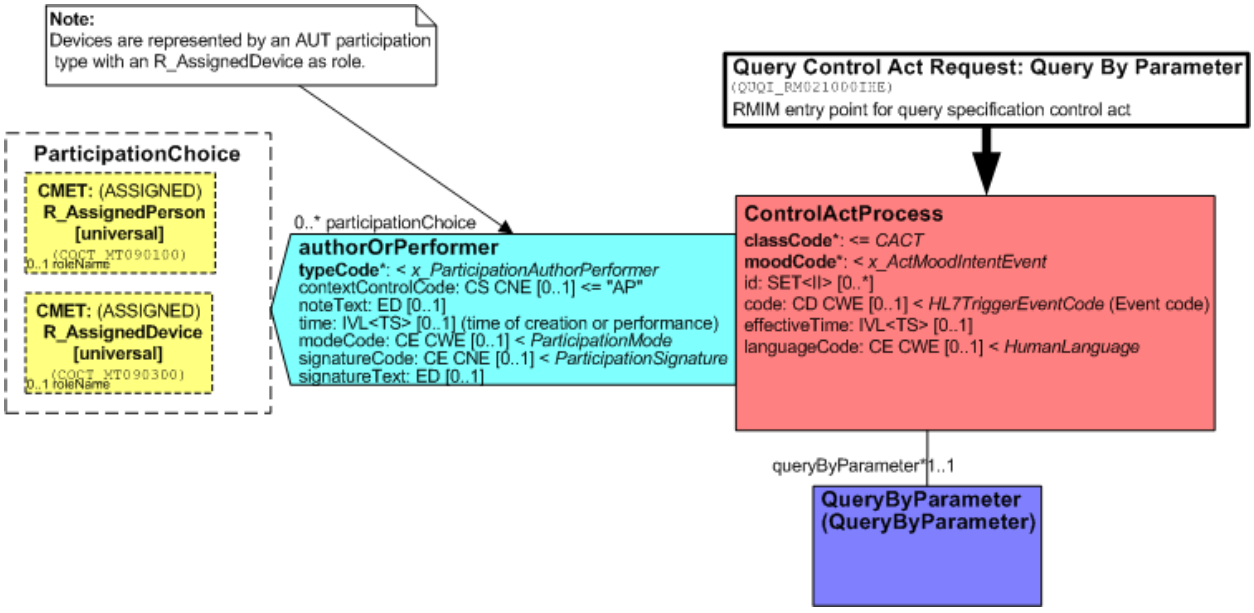


Figure O.2.3-3

The attributes of this model are described in the following table.

Table O.2.3-3

QUQI_HD021000IHE Query Control Act Request: QueryByParameter	This HMD extract defines the control act wrapper used to send HL7 V3 query by parameter messages. Derived from Figure O.2.3-1 (QUQI_RM021000IHE)
Control Act Process	The entry point from the transmission wrapper
classCode [1..1] (M) Act (CS) {CNE:CACT, default= "CACT"}	Structural attribute; this is a Control Act
moodCode [1..1] (M) Act (CS) {CNE:x_ActMoodIntentEvent}	Structural attribute; possible values are INT (intent), RQO (request), EVN (event, occurrence), PRP (proposal), RMD (recommendation), APT (appointment), ARQ (appointment request), or PRMS (promise).
id [0..*] Act (SET<II>)	Optional Control Act ID
code [0..1] Act (CD) {CWE:HL7TriggerEventCode}	The HL7 Trigger Event code
effectiveTime [0..1] Act (IVL<TS>)	Optional time stamp or time interval indication when the ControlActProcess took place
languageCode [0..1] Act (CE) {CWE:HumanLanguage}	Optional language code
authorOrPerformer	This optional participation represents the entity which made the query. The author of the query SHOULD be a person, or it MAY be a device.

QUQI_HD021000IHE Query Control Act Request: QueryByParameter	This HMD extract defines the control act wrapper used to send HL7 V3 query by parameter messages. Derived from Figure O.2.3-1 (QUQI_RM021000IHE)
typeCode [1..1] (M) Participation (CS) {CNE:x_ParticipationAuthorPerformer}	Structural attribute; this participation is of type "AUT" or "PRF"
contextControlCode [0..1] Participation (CS) {CNE:ContextControl, default= "AP"}	Optional contextControlCode, the default is "AP"
time [0..1] Participation (IVL<TS>)	Time of creation or performance.
modeCode [0..1] Participation (CE) {CWE:ParticipationMode}	This is the optional participation mode
queryByParameter	The stub to the Query By Parameter payload.

O.2.4 Query Control Act Request Continue/Cancel Information Model (QUQI_MT000001IHE)

Below is the Message Information Model for this control act wrapper. The purpose of the model is to describe the data elements relevant for use with IHE transactions based on HL7 V3 messages. It is a strict subset of the *Query Continuation/Cancel Control Act (QUQI_RM000001UV01)* RMIM, which can be found on the HL7 V3 2008 Edition CD at: Edition2008/domains/uvqi/editable/QUQI_RM000001UV.htm

The following restrictions were made on the original RMIM to arrive at the restricted model:

- The following optional class attributes have been omitted:
  - ControlActProcess.text
  - ControlActProcess.priorityCode
  - ControlActProcess.reasonCode
- All participations related to the ControlActProcess have been omitted
- The reasonOf act relationship has been omitted
- ControlActProcess.moodCode is fixed to RQO
- QueryContinuation.queryId is Mandatory
- QueryContinuation.statusCode is defaulted to "waitContinuedQueryResponse"

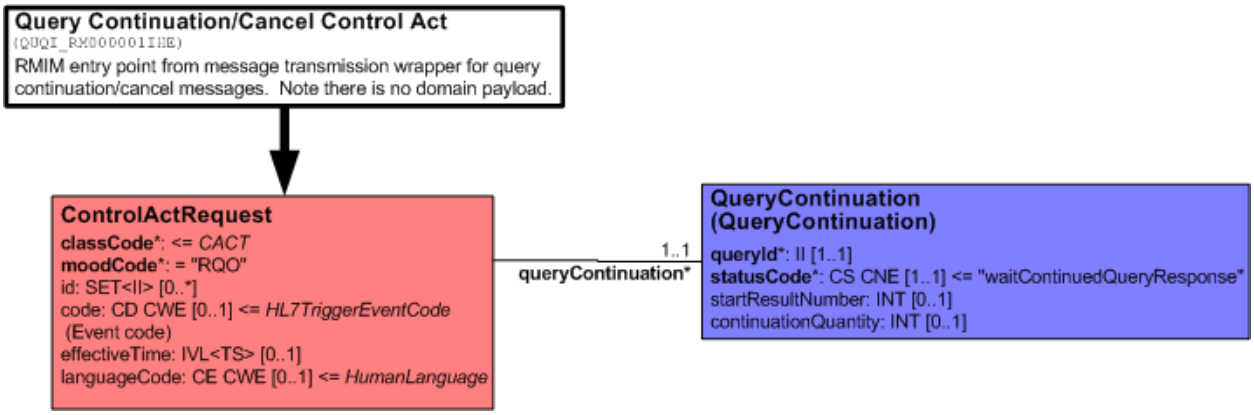


Figure O.2.4-1

The attributes of this model are described in the following table.

2435 **Table O.2.4-4**

QUQI_HD000001IHE Query Control Act Request Continuation/Cancelation Control Act	This HMD extract defines the control act of the query continuation request. Note that there is no payload. Derived from Figure O.2.4-1 (QUQI_RM021000IHE)
Control Act Process	The entry point from the transmission wrapper
classCode [1..1] (M) Act (CS) {CNE:CACT, default= "CACT"}	Structural attribute; this is a Control Act
moodCode [1..1] (M) Act (CS) {CNE:x_ActMoodIntentEvent, fixed="RQO"}	This is a request
id [0..*] Act (SET<II>)	Optional Control Act ID
code [0..1] Act (CD) {CWE:HL7TriggerEventCode}	The HL7 Trigger Event code
effectiveTime [0..1] Act (IVL<TS>)	Optional time stamp or time interval indication when the ControlActProcess took place
languageCode [0..1] Act (CE) {CWE:HumanLanguage}	Optional language code
QueryContinuation	The information about the query, which is being continued
queryId [1..1](M) QueryEvent (II)	The query identifier, which links this continuation request with the original query.
statusCode [1..1] (M) QueryEvent (CS) {CNE:QueryStatusCode, default="waitContnuedQueryResponse"}	The query status. The only other possible value is "aborted", indicating that no more results are needed from the query fulfiller.
startResultNumber [0..1]	Optionally, the query placer may request that the list of responses starts from a

QUQI_HD000001IHE Query Control Act Request Continuation/Cancelation Control Act	This HMD extract defines the control act of the query continuation request. Note that there is no payload. Derived from Figure O.2.4-1 (QUQI_RM021000IHE)
QueryContinuation (INT)	particular unit (based on the total number of responses returned by the query fulfiller to the original query)
continuationQuantity [0..1] QueryContinuation (INT)	Optionally, the query placer may specify the maximum number of responses to be returned by the query fulfiller. If 0 is specified, this is an indication that the query is cancelled. If this attributed is not valued, the query fulfiller shall use the quantity specified in the most recent query or continuation request.

O.3 IHE Transactions and Corresponding Transmission and Control Act Wrappers

The following table lists the wrappers for the currently defined IHE transactions, which use HL7 V3 messages.

Table O.3-1

Transaction Reference	Transmission Wrapper	Control Act Wrapper
3.44.4 – Patient Add or Revise	MCCI_MT000100UV01	MFMI_MT700701UV01
3.44.4 – Resolve Duplicates	MCCI_MT000100UV01	MFMI_MT700701UV01
3.44.4 – Acknowledgement	MCCI_MT000200UV01	None
3.45.4 – Get Corresponding Identifiers	MCCI_MT000100UV01	QUQI_MT021001UV01
3.45.4 – Get Corresponding Indenters Response	MCCI_MT000300UV01	MFMI_MT700711UV01
3.46.4 – Revise Demographic Data	MCCI_MT000100UV01	MFMI_MT700701UV01
3.46.4 – Acknowledgement	MCCI_MT000200UV01	None
3.47.4 – Find Candidates Query	MCCI_MT000100UV01	QUQI_MT021001UV01
3.47.4 – Find Candidates Response	MCCI_MT000300UV01	MFMI_MT700711UV01
3.47.4 – Query Continuation	MCCI_MT000300UV01	QUQI_MT000001UV01
3.47.4 – Acknowledgement	MCCI_MT000200UV01	None

Appendix P HL7 V3 Sample Messages

The following examples are available for information purposes on the IHE ftp site at ftp://ftp.ihe.net. The examples are organized by transactions.

P.44 Patient Identity Feed HL7 V3 – Sample Messages

- Patient Registry Record Added message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PIXV3/01_PatientRegistryRecordAdded1.xml
- Patient Registry Record Revised message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PIXV3/04_PatientRegistryRecordRevised2.xml
- Patient Registry Duplicates Resolved message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PIXV3/05_PatientRegistryDuplicatesResolved.xml
- HL7 V3 Accept Acknowledgement message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PIXV3/02_PatientRegistryRecordAdded1Ack.xml

P.45 PIXV3 Query – Sample Messages

- Patient Registry Get Identifiers Query message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PIXV3/06_PIXQuery1.xml
- Patient Registry Get Identifiers Query Response message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PIXV3/07_PIXQuery1Response.xml

P.46 PIXV3 Update Notification – Sample Messages

- Patient Registry Record Revised message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PIXV3/04_PatientRegistryRecordRevised2.xml
- HL7 V3 Accept Acknowledgement message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PIXV3/02_PatientRegistryRecordAdded1Ack.xml

P.47 Patient Demographics Query HL7 V3 – Sample Messages

- Patient Registry Find Candidates Query message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PDQV3/01_PDQQuery1.xml

- Patient Registry Find Candidates Query Response message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PDQV3/02_PDQQuery1Response.xml
- General Query Activate Query Continue message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PDQV3/03_PDQQuery1Continuation.xml
- General Query Activate Query Continue Response message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PDQV3/04_PDQQuery1ContinuationResponse.xml
- General Query Activate Query Cancel message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PDQV3/05_PDQQuery1Cancel.xml
- General Query Activate Query Cancel Acknowledgment message: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/examples/PDQV3/06_PDQQuery1CancelAck.xml

Appendix Q HL7 V3 Sample Payload XML Schemas

The following examples are available for information purposes on the IHE ftp site at ftp://ftp.ihe.net. The examples are organized by transactions.

Q.44 Patient Identity Feed HL7 V3 – Sample Schemas

- Patient Registry Record Added schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201301UV02.xsd
- Patient Registry Record Revised schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201302UV02.xsd
- Patient Registry Duplicates Resolved schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201304UV02.xsd
- HL7 V3 Accept Acknowledgment schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/MCCI_IN000002UV01.xsd

Q.45 PIXV3 Query – Sample Schemas

- Patient Registry Get Identifiers Query schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201309UV02.xsd
- Patient Registry Get Identifiers Query Response schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201310UV02.xsd

Q.46 PIXV3 Update Notification – Sample Schemas

- Patient Registry Record Revised schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201302UV02.xsd
- HL7 V3 Accept Acknowledgment schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/MCCI_IN000002UV01.xsd

Q.47 Patient Demographics Query HL7 V3 – Sample Schemas

- Patient Registry Find Candidates Query schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201305UV02.xsd
- Patient Registry Find Candidates Query Response schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201306UV02.xsd
- General Query Activate Query Continue schema: ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/QUQI_IN000003UV01.xsd
- HL7 V3 Accept Acknowledgment schema:

  ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/HL7V3/NE2008/multicacheschemas/MCCI_IN000002UV01.xsd

Appendix R: Mapping of HL7v2.5 to HL7v3 for PIX and PDQ

Add this section to illustrate the message mapping from HL7 v2.5 to HL7v3 for PIX transactions.

R.1 Data Types

The following table describes the mapping between HL7 v2.5 and HL7 v3 data types:

HL7 v2.5 Data Type		HL7 v3 Data Type
HD (on the field level)		Instance Identifier (II)
Namespace ID		Assigning Authority Name (optional)
Universal ID		root
Universal ID Type		Not mapped – the universal ID/root must be an ISO OID
		extension is not used
CX		Instance Identifier (II)
ID (ST)		extension
Check digit (ST)		Not mapped
Code identifying the check digit (ST)		Not mapped
assigning authority (HD)	Namespace ID (IS)	Assigning Authority Name (optional)
	Universal ID (ST)	root
	Universal ID Type (IS) (required to be "ISO")	Not mapped – the universal ID/root must be an ISO OID
identifier type code (ID)		Not mapped
assigning facility (HD)		Not mapped
effective date (DT)		ValidTime
expiration date (DT)		ValidTime
XPN		Person Name (PN)
ID Number (ST)		
Family Name (FN)		Family Part type

HL7 v2.5 Data Type	HL7 v3 Data Type
given name (ST)	Given Part type
Second or other given names or initials thereof (ST)	Given Part type – order of parts matters
suffix (e.g.,JR or III) (ST)	Suffix Part type
prefix (e.g., DR) (ST)	Prefix Part type
degree (e.g., MD) (IS)	Suffix Part type Qualifier
Name Representation code (ID)	
name context (CE)	
name validity range (DR)	ValidTime
name assembly order (ID)	
Name type code (ID)	Name Use Code
XTN	Telecom (TEL)
[999-] 999-9999 [x99999][C any text] (TN)	
telecommunication use code (ID)	Telecom Use Code
telecommunication equipment type (ID)	Reflected in the URL scheme of the URI (e.g. fax:) – see RFC 2806
Email address (ST)	URL Scheme code = mailto
Country Code (NM)	Part of the tel: URI (see RFC 3966)
Area/city code (NM)	Part of the tel: URI (see RFC 3966)
Phone Number (NM)	Part of the tel: URI (see RFC 3966)
Extension (NM)	Use of ";ext=" in the URI (see RFC 3966)
any text (ST)	Not mapped

R.2 Add New Person Message

Version 2.5 Conformance Profile	Version 3 Message	

Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
MSH										
	Field Separator		ST	R		Not Applicable				
	Encoding Characters		ST	R		Not Applicable				
	Sending Application		HD	R	MCCI_RM000100IHE - Send Message Payload	Device.id	SET<II>		R	Mapped SET data type components v2.5 HD components. table above.
		Namespace ID	IS	O				Y	R	
		Universal ID	ST	O				Y	R	
		Universal ID Type	ID	O				Y	R	
	Sending Facility		HD	R	MCCI_RM000100IHE - Send Message Payload	Organization.id	SET<II>		R	Mapped SET data type components v2.5 HD components. table above.
		Namespace ID	IS	O				Y	R	
		Universal ID	ST	O				Y	R	
		Universal ID Type	ID	O				Y	R	
	Receiving Application		HD	R	MCCI_RM000100IHE - Send Message Payload	Device.id	SET<II>		R	Mapped SET data type components v2.5 HD components. table above.
		Namespace ID	IS	O				Y		
		Universal ID	ST	O				Y		
		Universal ID Type	ID	O				Y		
	Receiving Facility		HD	R	MCCI_RM000100IHE - Send Message Payload	Organization.id	SET<II>		R	Mapped SET data type components v2.5 HD components. table above.
		Namespace ID	IS	O				Y		

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		Universal ID	ST	O				Y		
		Universal ID Type	ID	O				Y		
	Date/Time Of Message		TS	R	MCCI_RM000100IHE - Send Message Payload	Message.creationTime	TS	Y	R	
		Date/Time	NM	O	MCCI_RM000100IHE - Send Message Payload	Message.creationTime	TS	Y	R	
		Degree of Precision	ST	O						
	Security		ST	O	MCCI_RM000100IHE - Send Message Payload	Message.securityText	ST		O	
	Message Type		CM_MSG	R						
		Message type	ID	R	MCCI_RM000100IHE - Send Message Payload	Message.interactionId	II	Y	R	
		Trigger event	ID	R	MFMI_RM700200 - Registry Control Act	ControlActProcess.code	CDCWE	Y	R	
		Message structure	ID	R		Not mapped as interaction.Id expresses both message type and message structure				
	Message Control ID		ST	R		Message.id	II	Y	R	Only the id.r valued
	Processing ID		PT	R	MCCI_RM000100IHE - Send Message Payload	Message.processingCode	CSCNE		R	
		Processing ID	ID	O	MCCI_RM000100IHE - Send Message Payload	Message.processingCode	CSCNE		R	

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		Processing Mode	ID	O	MCCI_RM000100IHE - Send Message Payload	Message.processingModeCode	CSCNE		R	
	Version ID		VID	R	MCCI_RM000100IHE - Send Message Payload	Message.versionCode	CSCNE		O	
		Version ID	ID	O	MCCI_RM000100IHE - Send Message Payload	Message.versionCode	CSCNE		O	
		Internationalization Code	CE	O						
		International version ID	CE	O						
	Sequence Number		NM	O	XCCI_RM000100 - Send Message Payload	Message.sequenceNumber	INT		R	
	Continuation Pointer		ST	O						
	Accept Acknowledgment Type		ID	O	XCCI_RM000100 - Send Message Payload	Message.acceptAckCode	CSCNE		R	
	Accept Acknowledgment Type		ID	O	XCCI_RM000100 - Send Message Payload	Message.acceptAckCode	CSCNE		R	
	Country Code		ID	O						Mapped Cou Code to AD type. See Ta Below.
	Character Set		ID	O						Part of the X preamble
	Principal Language of Message		CE	O	MFMI_RM700200 - Registry Control Act	ControlActProcess.languageCode	CECWE	Y	R	
		Identifier	ST					Y	R	

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		Text	ST	O				Y	R	
		Name of coding system	IS	O				Y	R	
	Alternate Character Set Handling Scheme		ID	O						
	Conformance Statement ID		ID	O						
EVN										
	Event Type Code		ID	R	MFMI_RM700200 - Registry Control Act	ControlActProcess.code	CDCWE		O	
	Recorded Date/Time		TS	R	MFMI_RM700200 - Registry Control Act	ControlActProcess.effectiveTime	IVL<TS>		O	
		Date/Time	NM	O	MFMI_RM700200 - Registry Control Act	ControlActProcess.effectiveTime	IVL<TS>		O	
		Degree of Precision	ST	O						
	Date/Time Of Planned Event		TS	O						
		Date/Time	NM	O						
		Degree of Precision	ST	O						
	Event Reason Code		IS	RE	MFMI_RM700200 - Registry Control Act	ControlActProcess.reasonCode	SET<		O	

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
							CE>CWE			
	Operator ID		XCN	R	MFMI_RM700200 - Registry Control Act	dataEnterer.type Code	CECWE	Y	R	
		ID Number (ST)	ST	R	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 0
		Family Name	FN	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 1 - PN data t
		given name	ST	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 1 - PN data t
		Second or other given names or initials thereof	ST	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 1 - PN data t
		suffix (e.g.,JR or III)	ST	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 1 - PN data t
		prefix (e.g., DR)	ST	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal)

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
										COCT_MT0 1 - PN data t
		degree (e.g., MD)	IS	O	MFMI_RM700 200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 1 - PN data t
		source table	IS	O	MFMI_RM700 200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 7 - II data ty
		assigning authority	HD	R	MFMI_RM700 200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 7 - II data ty
		name type code	ID	O	MFMI_RM700 200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 7 - II data ty
		Identifier check digit	ST	O	MFMI_RM700 200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 7 - II data ty
		Code identifying the check digit scheme employed	ID	O	MFMI_RM700 200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 7 - II data ty
		identifier type code (IS)	IS	R	MFMI_RM700 200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_Assigned n (universal) COCT_MT0 7 - II data ty

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		assigning facility	HD	R	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_AssignedEn (universal) COCT_MT07 - II data ty
		Name Representation code	ID	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_AssignedEn (universal) COCT_MT07 - II data ty
		name context	CE	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_AssignedEn (universal) COCT_MT07 - II data ty
		name validity range	DR	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_AssignedEn (universal) COCT_MT07 - II data ty
		name assembly order	ID	O	MFMI_RM700200 - Registry Control Act			Y	R	Map to CME (ASSIGNED R_AssignedEn (universal) COCT_MT07 - II data ty
	Event Occurred		TS	O						
		Date/Time	NM	O						
		Degree of Precision	ST	O						
	Event Facility		HD	O	MCCI_RM000100 - Send Message Payload	Organization.id	SET<II>	Y	R	Mapped SET data type components v2.5 HD components. table above.
		Namespace ID	IS	O				Y	R	

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		Universal ID	ST	O				Y	R	
		Universal ID type	ID	O				Y	R	
PID										
	Patient Identifier List		CX	RE	PRPA_RM201301IHE - Patient Activate/Revise					
		ID	ST	R		Patient.id OtherIDs.id	SET<II>	Y	R	Mapped II data type components to v2.5 CX components. See table above.
		Check digit	ST	O		Not applicable				
		Code identifying the check digit	ID	O		Not applicable				
		assigning authority	HD	R				Y		
		identifier type code (ID)	ID	R				Y		
		assigning facility	HD	R				Y		
		effective date (DT)	DT	RE		Patient.effectiveTime	IVL<TS>	N	O	
		expiration date	DT	RE				Y		
	Patient Name		XPN	RE	PRPA_RM201301IHE - Patient Activate/Revise					
		Family Name	FN	R		Person.name	LIST<PN>	Y	R	Mapped LIST<PN> and data types components to v2.5 XPN components. See Table Below

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		given name	ST	O				Y		
		Second or other given names or initials thereof	ST	O				Y		
		suffix (e.g.,JR or III)	ST	O				Y		
		prefix (e.g., DR)	ST	O				Y		
		degree (e.g., MD)	IS	O				Y		
		name type code	ID	R				Y		
		Name Representation code	ID	O				Y		
		name validity range	DR	O				Y		
		name assembly order	ID	O				Y		
	Mother's Maiden Name		XPN	RE	PRPA_RM201301IHE - Patient Activate/Revise	ParentClient.id				Reference C COCT_MT0 0. Map LIST<PN> a data types components v2.4 CX components.
		Family Name	FN	R				Y		
		given name	ST	O				Y		
		Second or other given names or initials thereof	ST	O				Y		
		suffix (e.g.,JR or III)	ST	O				Y		
		prefix (e.g., DR)	ST	O				Y		
		degree (e.g., MD)	IS	O				Y		
		name type code	ID	R				Y		
		Name Representation	ID	O				Y		

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		code								
		name context	CE	O				Y		
		name validity range	DR	O				Y		
		name assembly order	ID	O				Y		
	Date/Time of Birth		TS	RE	PRPA_RM201301IHE - Patient Activate/Revise					
		Date/Time	NM	R		Person.birthTime	TS		O	
		Degree of Precision	ST	O						
	Administrative Sex		IS	RE	PRPA_RM201301IHE - Patient Activate/Revise	Person.administrativeGenderCode	CSCNE		R	
	Patient Alias		XPN	O	PRPA_RM201301IHE - Patient Activate/Revise					Mapped PN data types components v2.5 XPN components. table above.
		Family Name	FN	O		Person.name	BAG<PN>	Y	R	
		given name	ST	O				Y	R	
		Second or other given names or initials thereof	ST	O				Y	R	
		suffix (e.g.,JR or III)	ST	O				Y	R	
		prefix (e.g., DR)	ST	O				Y	R	
		degree (e.g.,	IS	O				Y	R	

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		MD)								
		name type code	ID	O				Y	R	
		Name Representation code	ID	O				Y	R	
		name context	CE	O				Y	R	
		name validity range	DR	O				Y	R	
		name assembly order	ID	O				Y	R	
	Patient Address		XAD	RE	PRPA_RM201301IHE - Patient Activate/Revise					
		street address (SAD)	SAD	R		Person.addr	BAG<AD>	Y	R	Mapped AD type compon to v2.5 XAD components. table below.
		city	ST	R				Y	R	
		state or province	ST	R				Y	R	
		zip or postal code	ST	R				Y	R	
		country	ID	R				Y	R	
		address type	ID	R				Y	R	
		address representation code	ID	O				Y	R	
		address validity range	DR	O				Y	R	
	Phone Number - Home		XTN	RE	PRPA_RM201301IHE - Patient Activate/Revise					
			TN	R		Person.telecom	BAG<	Y	R	Mapped TEL type compon to v2.5 XTN components.

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
							TEL>			table above.
		telecommunication use code	ID	R				Y	R	
		telecommunication equipment type (ID)	ID	O				Y	R	
		Email address	ST	O				Y	R	
		Country Code	NM	O				Y	R	
		Area/city code	NM	O				Y	R	
		Phone Number	NM	O				Y	R	
		Extension	NM	O				Y	R	
		any text	ST	O				Y	R	
	Phone Number - Business		XTN	RE						Mapped TEL type compon to v2.5 XTN components. table above.
			TN	R				Y	R	
		telecommunication use code	ID	R				Y	R	
		telecommunication equipment type (ID)	ID	O				Y	R	
		Email address	ST	O				Y	R	
		Country Code	NM	O				Y	R	
		Area/city code	NM	O				Y	R	
		Phone Number	NM	O				Y	R	
		Extension	NM	O				Y	R	

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		any text	ST	O				Y	R	
	Primary Language		CE	RE	PRPA_RM201301IHE - Patient Activate/Revise					
		Identifier	ST	O		LanguageCommunication.languageCode	CECWE		R	
		text	ST	O					R	
		Name of coding system	IS	O					R	
	SSN Number - Patient		ST	O	PRPA_RM201301IHE - Patient Activate/Revise	OtherIDs.id	SET<II>		R	
	Driver's Licence Number - Patient		DLN	O	PRPA_RM201301IHE - Patient Activate/Revise	OtherIDs.id	SET<II>		R	
		Driver's Licence Number	ST	O				Y	R	Mapped II da type for DLN type. See tab above.
		Issuing State, province, country	IS	O				Y	R	
		expiration date	DT	O				Y	R	
	Mother's Identifier		CX	RE	PRPA_RM201301IHE - Patient Activate/Revise	PersonalRelationship.relationshipHolder.id	II	Y	R	Mapped II da type for CX type. See tab above.
		ID	ST	R				Y	R	
		Check digit	ST	O				Y	R	
		check identifying the check digit scheme employed	ID	O				Y	R	

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		assigning authority	HD	O				Y	R	
		identifier type code(ID)	ID	R				Y	R	
		assigning facility	HD	O				Y	R	
		effective date (DT)	DT	O				Y	R	
		expiration date	DT	O				Y	R	
	Ethnic Group		CE	O						
	Birth Order		NM	RE	PRPA_RM201301IHE - Patient Activate/Revise	Person.multipleBirthOrderNumber			R	
	Patient Death Date and Time		TS	RE	PRPA_RM201301IHE - Patient Activate/Revise			Y	R	
		Date/Time	NM	O	PRPA_RM201301IHE - Patient Activate/Revise	Person.deceasedTime	TS		O	
		Degree of Precision	ST	O						
	Patient Death Indicator		ID	RE	PRPA_RM201301IHE - Patient Activate/Revise	Person.deceasedInd	BL		O	
	Last Update Date/Time		TS	O						Metadata
		Date/Time	NM	O						Metadata
		Degree of Precision	ST	O						
	Last Update Facility		HD	O						Metadata
		Namespace ID	IS	O						Metadata
		Universal ID	ST	O						Metadata

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		Universal ID type	ID	O						Metadata
NK1										
	Set ID - NK1		SI	R	PRPA_RM201301IHE - Patient Activate/Revise	PersonalRelationship.id				
	Name		XPN	O	COCT_MT030207UV – E_Person (informational) CMET	Person.name	LIST<PN>	Y	R	Mapped PN type compon to v2.5 XPN components. table above.
		family name	FN	O				Y	R	
		given name	ST	O				Y	R	
		Second or other given names or initials thereof	ST	O				Y	R	
		suffix (e.g.,JR or III)	ST	O				Y	R	
		prefix (e.g., DR)	ST	O				Y	R	
		degree (e.g., MD)	IS					Y	R	
		name type code	ID	O				Y	R	
		Name Representation code	ID	O				Y	R	
		name context	CE	O				Y	R	
		name validity range	DR	O				Y	R	
		name assembly order	ID	O				Y	R	
	Relationship		CE	R	PRPA_RM201301IHE - Patient Activate/Revise	PersonalRelationship.code			R	
		identifier	ST	O						
		text	ST	O						

Version 2.5 Conformance Profile					Version 3 Message					
Message Segment	Field Name	Components	Data Type	Conf	Message Information Model	Attribute Name	Data Type	Data Type Component Mapping Req'd?	Conf	Comments
		Name of coding system	IS	O						
	Date/Time of Birth		TS	O					R	
		Date/Time	NM	O				Y	R	
		Degree of Precision	ST	O				Y	R	
	Next of Kin/Associated Party's Identifiers		CX	R	COCT_MT030207UV – E_Person (informational) CMET	Person.id	SET<II>			Mapped II da type to CX d components. table above.
		ID	ST	R				Y	R	
		Check digit	ST	O				Y	R	
		check identifying the check digit scheme employed	ID	O				Y	R	
		assigning authority	HD	R				Y	R	
		identifier type code(ID)	ID	R				Y	R	
		assigning facility	HD	R				Y	R	