**Integrating the Healthcare Enterprise**



**IHE ITI**

**Technical Framework Supplement**

**Patient Resource Identity Management**

**(PRIM)**

HL7® FHIR® R4

Using Resources at FMM Level 3-N

**Revision 0.1 – Draft in Preparation for Public Comment**

Date: <Month xx, 20xx>

Author: ITI Technical Committee

Email: <domain\_name@ihe.net>

**Please verify you have the most recent version of this document.** See [here](http://ihe.net/Technical_Frameworks/) for Trial Implementation and Final Text versions and [here](http://ihe.net/Public_Comment/) for Public Comment versions.

**Foreword**

This is a supplement to the IHE ITI Technical Framework <VX.X>. Each supplement undergoes a process of public comment and trial implementation before being incorporated into the volumes of the Technical Frameworks.

This supplement is published on <Month XX, 201x> for Public Comment. Comments are invited and can be submitted at <http://www.ihe.net/Public_Comment/#domainname>. In order to be considered in development of the Trial Implementation version of the supplement, comments must be received by <Month XX,

This supplement describes changes to the existing technical framework documents.

“Boxed” instructions like the sample below indicate to the Volume Editor how to integrate the relevant section(s) into the relevant Technical Framework volume.

*Amend section X.X by the following:*

Where the amendment adds text, make the added text **bold underline**. Where the amendment removes text, make the removed text **~~bold strikethrough~~**. When entire new sections are added, introduce with editor’s instructions to “add new text” or similar, which for readability are not bolded or underlined.

General information about IHE can be found at [www.ihe.net](http://www.ihe.net/).

Information about the IHE IT Infrastructure domain can be found at [ihe.net/IHE\_Domains](http://ihe.net/IHE_Domains/).

Information about the organization of IHE Technical Frameworks and Supplements and the process used to create them can be found at [http://ihe.net/IHE\_Process](http://ihe.net/IHE_Process/) and [http://ihe.net/Profiles](http://ihe.net/Profiles/).

The current version of the IHE IT InfrastructureTechnical Framework can be found at [http://ihe.net/Technical\_Frameworks](http://ihe.net/Technical_Frameworks/).

*<Comments may be submitted on IHE Technical Framework templates any time at* [*http://ihe.net/Templates\_Public\_Comments*](http://ihe.net/Templates_Public_Comments/)*. Please enter comments/issues as soon as they are found. Do not wait until a future review cycle is announced.>*

**CONTENTS**

[Introduction to this Supplement 7](#_Toc7702365)

[Open Issues and Questions 9](#_Toc7702366)

[Closed Issues 9](#_Toc7702367)

[General Introduction and Shared Appendices 10](#_Toc7702368)

[Appendix A – Actor Summary Definitions 10](#_Toc7702369)

[Appendix B – Transaction Summary Definitions 10](#_Toc7702370)

[Appendix D – Glossary 11](#_Toc7702371)

[X Patient Resource Identity Management (PRIM) Profile 13](#_Toc7702372)

[49.1 PRIM Actors, Transactions, and Content Modules 13](#_Toc7702373)

[49.2 PRIM Actor Options 16](#_Toc7702374)

[49.3 PRIM Required Actor Groupings 16](#_Toc7702375)

[49.4 PRIM Overview 16](#_Toc7702376)

[49.4.1 Concepts 16](#_Toc7702377)

[49.4.2 Use Cases 16](#_Toc7702378)

[49.4.2.1 Use Case #1: Create Patient 17](#_Toc7702379)

[49.4.2.1.1 Create Patient Use Case Description 17](#_Toc7702380)

[49.4.2.1.2 Create Patient Process Flow 17](#_Toc7702381)

[49.4.2.2 Use Case #2: Update Patient Information 18](#_Toc7702382)

[49.4.2.2.1 Update Patient Use Case Description 18](#_Toc7702383)

[49.4.2.2.2 Update Patient Process Flow 19](#_Toc7702384)

[49.4.2.3 Use Case #3: Link Patient Records 19](#_Toc7702385)

[49.4.2.3.1 Link Patient Records Use Case Description 20](#_Toc7702386)

[49.4.2.3.2 Link Patient Process Flow 20](#_Toc7702387)

[49.5 PRIM Security Considerations 21](#_Toc7702388)

[49.6 PRIM Cross Profile Considerations 21](#_Toc7702389)

[Volume 2c – Transactions 23](#_Toc7702390)

[3.93 Mobile Patient Identity Feed [ITI-93] 23](#_Toc7702391)

[3.93.1 Scope 23](#_Toc7702392)

[3.93.2 Actor Roles 23](#_Toc7702393)

[3.93.3 Referenced Standards 23](#_Toc7702394)

[3.93.4 Interaction Diagram 24](#_Toc7702395)

[3.93.4.1 Mobile Patient Identity Feed Request Message 24](#_Toc7702396)

[3.93.4.1.1 Trigger Events 24](#_Toc7702397)

[3.93.4.1.2 Message Semantics 24](#_Toc7702398)

[3.93.4.1.2.1 FHIR Bundle Resource Constraints 24](#_Toc7702399)

[3.93.4.1.2.2 FHIR MessageHeader Resource Constraints 25](#_Toc7702400)

[3.93.4.1.3 Expected Actions 26](#_Toc7702401)

[3.93.4.2 Mobile Patient Identity Feed Response 26](#_Toc7702402)

[3.93.4.2.1 Trigger Events 26](#_Toc7702403)

[3.93.4.2.2 Message Semantics 26](#_Toc7702404)

[3.93.4.2.3 Expected Actions 27](#_Toc7702405)

[3.93.5 Security Considerations 27](#_Toc7702406)

[3.93.5.1 Security Audit Considerations 27](#_Toc7702407)

[3.93.5.1.1 Supplier audit message: 27](#_Toc7702408)

[3.93.5.1.2 Patient Identity Manager audit message: 28](#_Toc7702409)

[3.94 Subscribe to Patient Updates [ITI-94] 30](#_Toc7702410)

[3.94.1 Scope 30](#_Toc7702411)

[3.94.2 Actor Roles 30](#_Toc7702412)

[3.94.3 Referenced Standards 31](#_Toc7702413)

[3.94.4 Interaction Diagram 31](#_Toc7702414)

[3.94.4.1 Subscribe to Patient Updates Request Message 32](#_Toc7702415)

[3.94.4.1.1 Trigger Events 32](#_Toc7702416)

[3.94.4.1.2 Message Semantics 32](#_Toc7702417)

[3.94.4.1.2.1 FHIR Subscription Resource Constraints 32](#_Toc7702418)

[3.94.4.1.3 Expected Actions 33](#_Toc7702419)

[3.94.4.2 Subscribe to Patient Updates Response 33](#_Toc7702420)

[3.94.4.2.1 Trigger Events 33](#_Toc7702421)

[3.94.4.2.2 Message Semantics 33](#_Toc7702422)

[3.94.4.2.3 Expected Actions 34](#_Toc7702423)

[3.94.4.3 Get Patient Subscription Request/Response Message 34](#_Toc7702424)

[3.94.4.4 Enable/Disable Patient Subscription Request/Response Message 34](#_Toc7702425)

[3.94.4.5 Delete Patient Subscription Request/Response Message 34](#_Toc7702426)

[3.94.5 Security Considerations 34](#_Toc7702427)

[3.94.5.1 Security Audit Considerations 34](#_Toc7702428)

[3.94.5.1.1 Patient Subscriber audit message: 35](#_Toc7702429)

[3.94.5.1.2 Patient Identity Manager audit message: 36](#_Toc7702430)

[3.78.2 Actor Roles 38](#_Toc7702431)

[3.83.2 Actor Roles 39](#_Toc7702432)

# Introduction to this Supplement

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Whenever possible, IHE profiles are based on established and stable underlying standards. However, if an IHE domain determines that an emerging standard has high likelihood of industry adoption, and the standard offers significant benefits for the use cases it is attempting to address, the domain may develop IHE profiles based on such a standard. During Trial Implementation, the IHE domain will update and republish the IHE profile as the underlying standard evolves.  Product implementations and site deployments may need to be updated in order for them to remain interoperable and conformant with an updated IHE profile.  This PRIM Profile is based on Release 4 of the emerging HL7®[[1]](#footnote-1) FHIR®[[2]](#footnote-2) specification. HL7 describes FHIR Change Management and Versioning at <https://www.hl7.org/fhir/versions.html>.  HL7 provides a rating of the maturity of FHIR content based on the FHIR Maturity Model (FMM): level 0 (draft) through N (Normative). See <http://hl7.org/fhir/versions.html#maturity>.  The FMM levels for FHIR content used in this profile are:   |  |  | | --- | --- | | FHIR Content | FMM Level | | Patient | N | | Bundle | N | | MessageHeader | 4 | | Subscription | 3 | |

The Patient Resource Identity Management (PRIM) Profile supports the creating, updating and deprecating of master identity information, as well as subscribing to these changes, about a subject of care using the HL7 FHIR standard and its RESTful transactions. Where “identity” information includes all information found in the FHIR Patient resource such as identifier, name, phone, gender, birth date, address, marital status, photo, others to contact, preference for language, general practitioner, and links to other instances of identities.

Beyond the basic create, retrieve, update, and delete (CRUD) transaction set, this profile addresses important patient safety issues related to the existence of two patient demographic records that have, in error, been established for the same person. The deprecated record will link to the surviving record as a replacement and be marked as inactive. Leveraging the Profile’s actors and the architectural patterns that describe their operation, PRIM supports patient-safe demographic records merging by stipulating the mandatory behaviors of FHIR servers that maintain health data about the subjects of care such that no health information is “orphaned” following the merge. This function is addressed by requiring that when links are made between the two or more Patient instances any query against any of the patient identifiers that have been linked shall return results for all the linked records.

This profile is intended for FHIR only configurations without other underlying standards. We chose to use the FHIR message pattern because it fits well into the subscription notification model.

## Open Issues and Questions

**PRIM-1:** HL7 Patient Administration workgroup is looking at better defining the patient merge/link functionality in FHIR. We will follow this work and collaborate with HL7 to keep these efforts aligned.

**PRIM-2:** Should we include shall, should, or may for Provenance resources in the Mobile Patient Identity Feed transaction? This version doesn’t provide any guidance on Provenance, should it?

**PRIM-3:** Should Subscription be an option or required on the Patient Identity Manager? Should the configurable feed destination be an option or required for Patient Identity Manager?

**PRIM-5:** In some profiles demographics is used to cover all demographic information including identifiers. This profile uses identity to cover demographics and identifiers. Which term is most clear and should this profile use demographics instead of identity?

**PRIM-6:** Should we include an option on the Patient Identity Manager to support the FHIR $match operation on patients? This would require an additional actor and transaction.

**PRIM-8:** IHE has submitted a Change Request [GF#23009](https://gforge.hl7.org/gf/project/fhir/tracker/?action=TrackerItemEdit&tracker_item_id=23009) with HL7 to clarify their usage of link with RelatedPerson as recommended in this profile to allow for management of parent relationships to children.

## Closed Issues

***PRIM-4:*** *There is a new profile work item in ITI that would bind this profile and MHD into a FHIR based document sharing health information exchange.*

# General Introduction and Shared Appendices

The [IHE Technical Framework General Introduction and Shared Appendices](http://ihe.net/Technical_Frameworks/#GenIntro) are components shared by all of the IHE domain technical frameworks. Each technical framework volume contains links to these documents where appropriate.

*Update the following appendices to the General Introduction as indicated below. Note that these are* ***not*** *appendices to Volume 1.*

# Appendix A – Actor Summary Definitions

*Add the following actors to the IHE Technical Frameworks General Introduction Appendix A:*

|  |  |
| --- | --- |
| Actor Name | Definition |
| Patient Identity Manager | A Patient Identity Manager receives patient updates, manages master patient identities, sends patient resource updates for Patient identity changes, and provides a searchable repository of patient identity information. |
| Patient Identity Subscriber | A Patient Identity Subscriber sends subscription requests for Patient Resource updates to be sent to a Patient Identity Consumer. |
| Patient Identity Consumer | A Patient Identity Consumer receives patient resource updates. |

# Appendix B – Transaction Summary Definitions

*Add the following transactions to the IHE Technical Frameworks General Introduction Appendix B:*

|  |  |
| --- | --- |
| Transaction Name and Number | Definition |
| Mobile Patient Identity Feed [ITI-93] | Notifications of all events related to patient resources (creation, update, link, etc.). |
| Subscribe to Patient Updates [ITI-94] | Subscription to notifications about events impacting patient resources (creation, update, link, etc.). |

# Appendix D – Glossary

*Add the following* ***new*** *glossary terms to the IHE Technical Frameworks General Introduction Appendix D.*

| Glossary Term | Definition |
| --- | --- |
| Patient Identity | All information identifying the patient, such as identifier, name, phone, gender, birth date, address, marital status, photo, others to contact, preference for language, general practitioner, and links to other instances of identities. |
| Master Patient Identity | An authority manages a unified Master Patient Identity among many participants. The Master Patient Identity is harmonized using business rules appropriate to the setting. |

**Volume 1 – Profiles**

*Add new Section 49*

# 49 Patient Resource Identity Management (PRIM) Profile

The Master Patient Identity Management (MPIM) Profile supports the creating, updating and deprecating of master identity information, as well as subscribing to these changes, about a subject of care using the HL7 FHIR standard. In PRIM, “patient identity” includes all information found in the FHIR Patient Resource such as identifier, name, phone, gender, birth date, address, marital status, photo, others to contact, preference for language, general practitioner, and links to other instances of identities. The “master patient identity” is managed centrally among many participating organizations.

This profile also addresses important patient safety issues related to the merging of two patient identity records that have, in error, been established for the same person. The deprecated record will link to the surviving record as a replacement and be marked as inactive. PRIM supports maintaining identity records linking by stipulating the mandatory behaviors of systems that maintain health data about the subjects of care such that no health information is “orphaned”. PRIM requires that when merge or links are made between the two or more Patient instances, any query against any of the patient identifiers that have been linked return results for all the linked records, and to the extent possible, deprecated Patient identities are no longer utilized Clinical data referencing merged Patients should be updated so that queries for the merged Patient will return all relevant clinical data.

## 49.1 PRIM Actors, Transactions, and Content Modules

This section defines the actors, transactions, and/or content modules in this profile. General definitions of actors are given in the Technical Frameworks General Introduction Appendix A. IHE Transactions can be found in the Technical Frameworks General Introduction Appendix B. Both appendices are located at <http://ihe.net/Technical_Frameworks/#GenIntro>

Figure 49.1-1 shows the actors directly involved in the PRIM Profile and the relevant transactions between them. If needed for context, other actors that may be indirectly involved due to their participation in other related profiles are shown in dotted lines.

****

**Figure 49.1-1: PRIM Actor Diagram**

Table 49.1-1 lists the transactions for each actor directly involved in the PRIM Profile. To claim compliance with this profile, an actor shall support all required transactions (labeled “R”) and may support the optional transactions (labeled “O”).

**Table 49.1-1: PRIM Profile - Actors and Transactions**

|  |  |  |  |
| --- | --- | --- | --- |
| Actors | Transactions | Optionality | Reference |
| Patient Identity Source | Mobile Patient Identity Feed [ITI-93] | R | ITI TF-2c: 3.93 |
| Patient Identity Consumer | Mobile Patient Identity Feed [ITI-93] | R | ITI TF-2c: 3.93 |
| Patient Identity Manager | Mobile Patient Identity Feed [ITI-93] | R | ITI TF-2c: 3.93 |
| Mobile Patient Identifier Cross-reference Query [ITI-83] | R | ITI TF-2c: 3.83  (Note 1) |
| Mobile Patient Demographics Query [ITI-78] | R | ITI TF-2c: 3.78  (Note 2) |
| Subscribe to Patient Updates [ITI-94] | R | ITI TF-2c: 3.94 |
| Patient Demographics Consumer | Mobile Patient Demographics Query [ITI-78] | R | ITI TF-2c: 3.83 |
| Patient Identifier Cross-reference Consumer | Mobile Patient Identifier Cross-reference Query [ITI-83] | R | ITI TF-2c: 3.83 |
| Patient Identity Subscriber | Subscribe to Patient Updates [ITI-94] | R | ITI TF-2c: 3.94 |

Note 1: The Patient Identity Manager shall respond to [ITI-83] queries using the requirements in that transaction for the Patient Identity Cross-Reference Manager.

Note 2: The Patient Identity Manager shall respond to [ITI-78] queries using the requirements in that transaction for the Patient Demographics Supplier.

## 49.2 PRIM Actor Options

Options that may be selected for each actor in this profile, if any, are listed in the Table 49.2-1. Dependencies between options, when applicable, are specified in notes.

**Table 49.2-1: PRIM – Actors and Options**

|  |  |  |
| --- | --- | --- |
| Actor | Option Name | Reference |
| Patient Identity Source | None | -- |
| Patient Identity Consumer | None | -- |
| Patient Identity Manager | None | -- |
| Patient Identity Subscriber | None | -- |
| Patient Demographics Consumer | None | -- |
| Patient Identifier Cross-reference Consumer | None | -- |

## 49.3 PRIM Required Actor Groupings

**Table 49.3-1: PRIM Profile - Required Actor Groupings**

|  |  |  |  |
| --- | --- | --- | --- |
| PRIM Actor | Actor(s) to be grouped with | Reference | Content Bindings Reference |
| Patient Identity Source | -- | None | -- |
| Patient Identity Consumer | -- | None | *--* |
| Patient Identity Manager | -- | None | *--* |
| Patient Identity Subscriber | -- | None | *--* |
| Patient Demographics Consumer | -- | None | -- |
| Patient Identifier Cross-reference Consumer | -- | None | -- |

## 49.4 PRIM Overview

### 49.4.1 Concepts

Not applicable.

### 49.4.2 Use Cases

#### 49.4.2.1 Use Case #1: Create Patient

A new client record is created in a demographic database.

##### 49.4.2.1.1 Create Patient Use Case Description

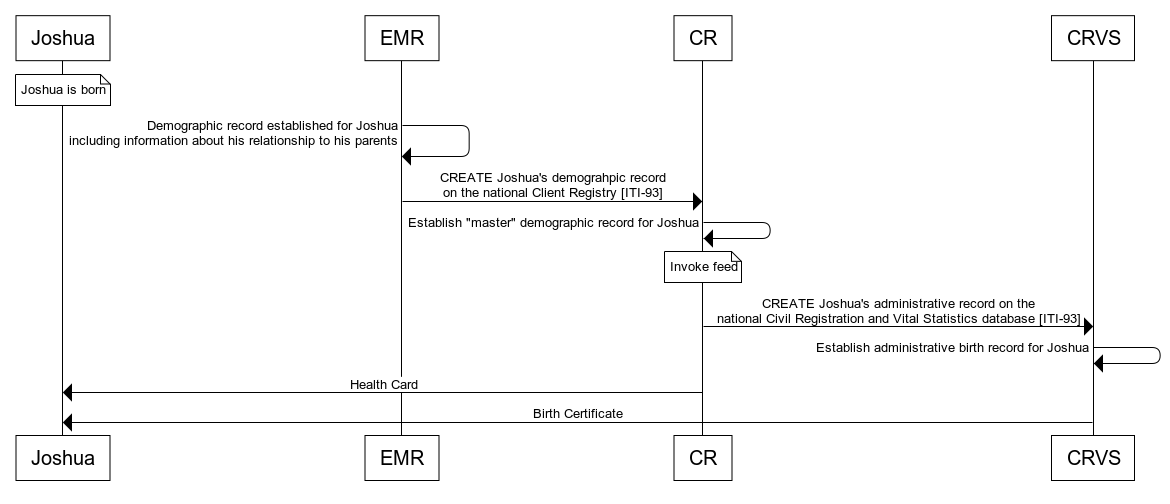
Following a healthy pregnancy, Mosa gives birth in a care facility to her new baby: Joshua. Information is captured about Joshua and about the relationship between him and his parents in the care facility’s electronic medical records (EMR) system. Leveraging the information in the EMR, a new demographic record is created for baby Joshua in the Ministry of Health’s (MOH) national Client Registry.

Joshua’s demographic record in the Client Registry establishes his unique identity across the care delivery network operated under the auspices of the MOH. Joshua’s data is also securely shared with the Civil Registration and Vital Statistics (CRVS) database maintained by the Ministry of Home Affairs in the country where Joshua was born. This CRVS data is used to generate a birth certificate for Joshua.

Some days after Mosa and Joshua return home from the care facility, Joshua’s health card and his birth certificate are delivered. Joshua now has his unique identifier for health purposes and his birth certificate, which affords him a legal status in his country.

The EMR acts as a Patient Identity Source. The CR acts as the Patient Identity Manager. The CRVS acts as a Patient Identity Consumer.

##### 49.4.2.1.2 Create Patient Process Flow



**Figure 49.4.2.1.2-1: Process Flow for the Create Patient Use Case**

@startuml

participant Joshua

participant EMR

participant CR

participant CRVS

Note over Joshua: Joshua is born

EMR->EMR: Demographic record established for Joshua\nincluding information about his relationship to his parents

EMR->CR: CREATE Joshua's demograhpic record\non the national Client Registry [ITI-93]

CR->CR: Establish "master" demographic record for Joshua

Note over CR: Invoke feed

CR->CRVS: CREATE Joshua's administrative record on the\nnational Civil Registration and Vital Statistics database [ITI-93]

CRVS->CRVS: Establish administrative birth record for Joshua

CR->Joshua: Health Card

CRVS->Joshua: Birth Certificate93@enduml

Figure 49.4.2.1.2-2: Create Patient Workflow Diagram Pseudocode

**Pre-conditions**:

Joshua is born at a care facility. The details about his name, his gender, and his parental relationships are known. These are captured in the care facility’s EMR. Since this is a birth, the EMR knows there will be no duplicate records.

**Main Flow**:

Joshua’s information in the care facility’s EMR is communicated to the MOH’s national Client Registry (CR). If the CREATE message is complete the EMR receives a “success” response -- otherwise an “exception” response is returned. Joshua’s information in the CR is also communicated to the MOH’s national Civil Registration and Vital Statistics (CRVS) database. If the CREATE message is complete the CR receives a “success” response -- otherwise an “exception” response is returned.

**Post-conditions:**

If the EMR message was complete, his new “master” demographic record will be established on the MOH’s CR and on the MOH’s CRVS. In time, Joshua will receive his health card and his birth certificate.

#### 49.4.2.2 Use Case #2: Update Patient Information

An existing client record is updated in a demographic database.

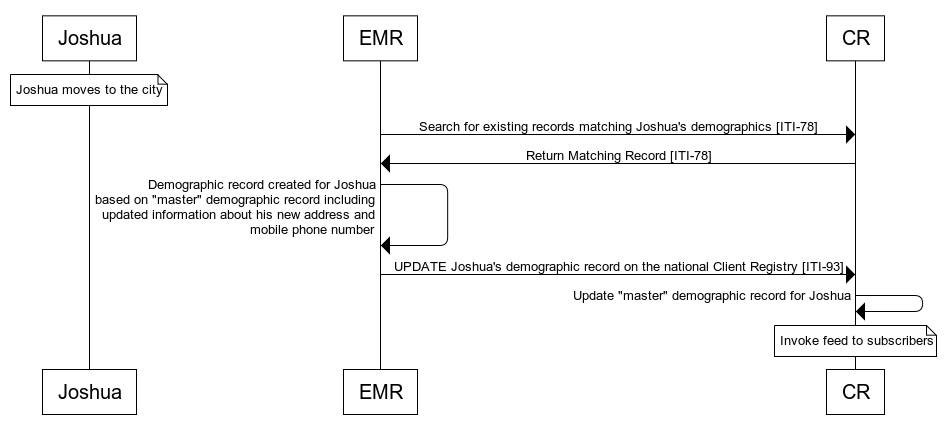
##### 49.4.2.2.1 Update Patient Use Case Description

Following a healthy childhood and after completing his schooling, Joshua leaves home to start a new job in a nearby city. As part of starting his new job at his new company, Joshua attends at a local community clinic in the new city to obtain a physical check-up as part of the process to become enrolled in the company’s health insurance plan.

Joshua’s demographic details are created in the clinic’s EMR to with his new address and his new mobile phone number. The EMR searches the CR for Joshua’s “master” record and then updates the MOH CR with Joshua’s updated demographic details.

The EMR acts as a Patient Identity Supplier. The CR acts as the Patient Identity Manager.

##### 49.4.2.2.2 Update Patient Process Flow



**Figure 49.4.2.2.2-1: Process Flow for the Update Patient Use Case**

@startuml

participant Joshua

participant EMR

participant CR

Note over Joshua: Joshua moves to the city

EMR->CR: Search for existing records matching Joshua's demographics [ITI-78]

CR->EMR: Return Matching Record [ITI-78]

EMR->EMR: Demographic record created for Joshua\nbased on "master" demographic record including\nupdated information about his new address and\nmobile phone number

EMR->CR: UPDATE Joshua's demographic record on the national Client Registry [ITI-93]

CR->CR: Update "master" demographic record for Joshua

Note over CR: Invoke feed to subscribers93@enduml

Figure 49.4.2.2.2-2: Update Patient Workflow Diagram Pseudocode

**Pre-conditions**:

Joshua has moved to the city and has a new address and mobile phone number. Joshua’s “master” record is retrieved from the CR into the EMR and these updated details are captured in the community care facility’s EMR.

**Main Flow**:

Joshua’s information in the care facility’s EMR is communicated as an UPDATE to the MOH’s national Client Registry (CR). If the data message is complete, the EMR receives a “success” response -- otherwise an “exception” response is returned.

**Post-conditions:**

If the EMR message was complete, his existing “master” demographic record will be updated on the MOH’s CR with the new, more up-to-date information that was captured in the community clinic’s EMR.

#### 49.4.2.3 Use Case #3: Link Patient Records

A duplicate client record has been created, in error, in a demographic database. This duplicate record is linked with the pre-existing *correct* demographic record and health data that has been captured, in error, against the duplicate client ID is linked to the correct, *surviving*, client ID. This linking is sometimes referred to as merge; however, technically, the result is linking.

##### 49.4.2.3.1 Link Patient Records Use Case Description

Joshua becomes concerned and travels to a different city to visit a Voluntary Counseling and Testing (VCT) clinic to be tested for HIV. He pretends that he has forgotten his health card and provides inaccurate demographic information at the VCT, who set up a new record for him in their EMR. The EMR communicates this demographic information to the MOH’s CR where, in error, a new demographic record for Joshua is established.

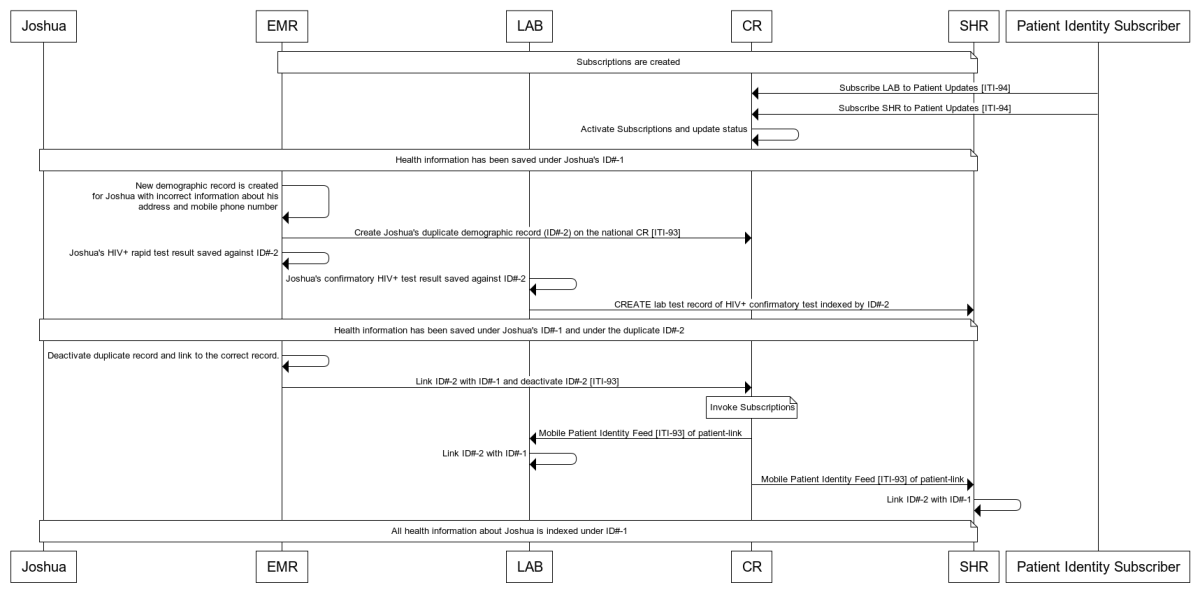
Joshua completes the HIV rapid test, which is positive. A confirmatory test is taken, which must be sent to the regional lab for processing. Both the results of the rapid test and the results of the confirmatory test reference Joshua’s **duplicate** demographic record. The test results are saved to the Shared Health Record (SHR) referencing the duplicate demographic record.

When Joshua returns to the clinic to receive his confirmatory lab results, and after receiving counselling regarding confidentiality rules and the importance of care continuity, Joshua corrects his demographic information. The EMR links Joshua’s two demographic records to a single unique ID# and sends a link message to the national CR to do the same.

The various databases that store health information about Joshua have subscribed to update transactions on the national CR. To ensure patient safety for Joshua, these systems ensure that a query using Joshua’s resolved unique ID# would, correctly, return all of the health information associated with him -- whether it was originally persisted under his duplicate ID# or under his post-link unique ID#.

The EMR acts as a Patient Identity Supplier. The LAB and SHR act as Patient Identity Consumers. The CR acts as the Patient Identity Manager.

##### 49.4.2.3.2 Link Patient Process Flow



**Figure 49.4.2.3.2-1: Process Flow for the Link Patient Use Case**

@startuml

participant Joshua

participant EMR

participant LAB

participant CR

participant SHR

participant Patient Identity Subscriber

Note over EMR,LAB,CR,SHR: Subscriptions are created

Patient Identity Subscriber->CR: Subscribe LAB to Patient Updates [ITI-94]

Patient Identity Subscriber->CR: Subscribe SHR to Patient Updates [ITI-94]

CR->CR: Activate Subscriptions and update status

Note over Joshua,EMR,LAB,CR,SHR: Health information has been saved under Joshua's ID#-1

EMR->EMR: New demographic record is created\nfor Joshua with incorrect information about his\naddress and mobile phone number

EMR->CR: Create Joshua's duplicate demographic record (ID#-2) on the national CR [ITI-93]

EMR->EMR: Joshua's HIV+ rapid test result saved against ID#-2

LAB->LAB: Joshua's confirmatory HIV+ test result saved against ID#-2

LAB->SHR: CREATE lab test record of HIV+ confirmatory test indexed by ID#-2

Note over Joshua,EMR,LAB,CR,SHR: Health information has been saved under Joshua's ID#-1 and under the duplicate ID#-2

EMR->EMR: Deactivate duplicate record and link to the correct record.

EMR->CR: Link ID#-2 with ID#-1 and deactivate ID#-2 [ITI-93]

Note over CR: Invoke Subscriptions

CR->LAB: Mobile Patient Identity Feed [ITI-93] of patient-link

LAB->LAB: Link ID#-2 with ID#-1

CR->SHR: Mobile Patient Identity Feed [ITI-93] of patient-link

SHR->SHR: Link ID#-2 with ID#-1

Note over Joshua,EMR,LAB,CR,SHR: All health information about Joshua is indexed under ID#-1949494939393@enduml

Figure 49.4.2.3.2-2: Link Patient Workflow Diagram Pseudocode

**Pre-conditions**:

Systems that maintain patient information subscribe to the needed Patient data on the national Client Registry.

**Main Flow**:

A duplicate demographic record is, in error, created on the national CR. When the error is found, the duplicate records are linked on the EMR, and a transaction is executed to link them on the CR. This triggers the subscriptions, and health data systems that have subscribed to updates on the CR are updated with information about the ID#s that are to be linked. Each of these systems updates their local health data to reflect the link message.

**Post-conditions:**

Following the execution of the triggered Link message, each system that maintains health data about the subject of care has updated this local data to reflect the link of the two demographic ID#s. The subsumed identifier is deprecated.

## 49.5 PRIM Security Considerations

See ITI TF-2x: Appendix Z.8 for general FHIR security considerations.

In addition, the PRIM profile is communicating Patient Identity information including identifiers, addresses, demographics, and contact information. This information includes personal identifiers, and the identity is linked to health information. Care must be taken to protect the privacy of the patient and the security of system.

## 49.6 PRIM Cross Profile Considerations

Any system that implements the Patient Identity Consumer Actor and manages patient clinical data shall follow the merge, link, and unlink actions and update its data to reflect the merged, linked, or unlinked data.

Any system that implements the Patient Identity Consumer Actor should consider the implications of the feed to its data store.

**Appendices**

Not applicable.

Volume 2c – Transactions

Add Section 3.93

## 3.93 Mobile Patient Identity Feed [ITI-93]

### 3.93.1 Scope

The Mobile Patient Identity Feed transaction sends a FHIR Bundle of new and updated Patient Resources.

### 3.93.2 Actor Roles

The roles in this transaction are defined in the following table and may be played by the actors shown here:

Table 3.93.2-1 Actor Roles

|  |  |
| --- | --- |
| **Role:** | Supplier: Sends a bundle of updates. |
| **Actor(s):** | The following actors may play the role of *Supplier:*  Patient Identity Source  Patient Identity Manager |
| **Role:** | Consumer: Accepts the bundle request and returns a bundle response. |
| **Actor(s):** | The following actors may play the role of *Consumer:*  Patient Identity Manager  Patient Identity Consumer |

### 3.93.3 Referenced Standards

* HL7 FHIR standard Release 4 <http://hl7.org/fhir/R4/index.html>

### 3.93.4 Interaction Diagram

Mobile Patient Identity Feed Response

Mobile Patient Identity Feed Request

Supplier

Consumer

#### 3.93.4.1 Mobile Patient Identity Feed Request Message

The Mobile Patient Identity Feed message is a FHIR message with the new and updated Patient Resource(s).

##### 3.93.4.1.1 Trigger Events

A Supplier triggers a Mobile Patient Identity Feed Request to a Consumer when patients are created, updated, linked, unlinked, or deleted.

##### 3.93.4.1.2 Message Semantics

A Supplier initiates a FHIR message request using HTTP POST as defined at <https://www.hl7.org/fhir/R4/messaging.html> on a Bundle Resource.

A Consumer shall support accepting a request for both the JSON and the XML messaging formats as defined in FHIR. A Supplier shall send either the JSON or the XML messaging formats as defined in FHIR. See ITI TF-2x: Appendix Z.6 for more details.

##### 3.93.4.1.2.1 FHIR Bundle Resource Constraints

The Bundle Resource shall be further constrained as described in Table 3.93.4.1.2.1-1. The Element column in Table 3.93.4.1.2.1-1 references the object model defined at <https://www.hl7.org/fhir/R4/bundle.html#resource>.

Table 3.93.4.1.2.1-1: Bundle Resource Constraints

| Element  &  Cardinality | Constraints |
| --- | --- |
| type  [1..1] | Shall be: message |
| entry  [2..\*] | The first resource in the entry list shall be a MessageHeader Resource.  The remaining entries shall be Patient Resource(s). |
| entry.request.method | To indicate created, updated, or deleted records:  POST | PUT | DELETE |

##### 3.93.4.1.2.2 FHIR MessageHeader Resource Constraints

A Supplier shall create a Bundle Resource of type “message” with the first entry being a MessageHeader Resource. The MessageHeader Resource shall be further constrained as described in Table 3.93.4.1.2.2-1. The Element column in Table 3.93.4.1.2.2-1 references the object model defined at <https://www.hl7.org/fhir/R4/messageheader.html#resource>.

Table 3.93.4.1.2.2-1: MessageHeader Resource Constraints

| Element  &  Cardinality | Constraints |
| --- | --- |
| eventUri  [1..1] | Shall be one of:  urn:ihe:iti:prim:2019:patient-link  urn:ihe:iti:prim:2019:patient-unlink  urn:ihe:iti:prim:2019:patient-update |
| focus  [1..\*] | Reference(Patient)  The patients being sent in this feed. |
| destination  [1..\*] | The destination(s) of this feed. |
| sender  [0..1] | Required if known. |
| enterer  [0..1] | Required if known. |
| author  [0..1] | Required if known. |
| responsible  [0..1] | Required if known. |

The eventUri shall be patient-link when the update is a link from one or more Patient Resources to another Patient Resource. The eventUri shall be patient-unlink when the update removes a link from one or more Patient Resource.

When the eventUri is patient-link, the Bundle Resource shall include at least 1 Patient Resource that is being linked with the link element populated. When the link is a result of a duplicate record, then deprecated Patient Resource shall set link.type to “replaced-by” and link.other shall be a reference to the surviving Patient Resource.

When the eventUri is patient-unlink, the Bundle Resource shall include at least 1 Patient Resource that is being unlinked with the link element removed.

When the eventUri is patient-update, the Bundle Resource shall include at least 1 Patient Resource that has been created, updated, or deleted.

When a Patient needs to be associated to a related person (such as parents) the Patient Resource shall use the link with a link.type set to “seealso” and the link.other will be a reference to a RelatedPerson Resource. When links are set for this purpose, the eventUri shall be patient-update and not patient-link.

See ITI TF-2x: Appendix W for informative implementation material for this transaction.

##### 3.93.4.1.2.3 Example FHIR Bundle

Figure 3.93.4.1.2.3-1 shows a simplified Bundle to show Patient 123 being replaced by Patient 456.

{

"resourceType": "Bundle",

"type": "message",

"entry": [

{

"resourceType": "MessageHeader",

"eventUri": "urn:ihe:iti:prim:2019:patient-link",

"focus": [

{

"reference": "Patient/123"

}

],

"destination": [

{

"endpoint": "http://example.com/patientEndpoint"

}

]

},

{

"resourceType": "Patient",

"id": "123",

"active": false,

"link": [

{

"other": {

"reference": "Patient/456"

},

"type": "replaced-by"

}

]

}

]

}

Figure 3.93.4.1.2.3-1: Example FHIR Bundle

##### 3.93.4.1.3 Expected Actions

A Consumer shall accept the message and return a Mobile Patient Identity Feed Response message (Section 3.93.4.2) and will process the feed in line with its application capabilities; see Section 1:49.6.

other transactionsprocessedincluded 49.

A Consumer who is a Patient Identity Manager shall:

* treat linked patients as if they were the same when the message includes a link of two or more Patient Resources.
* not treat patients as if they were the same when the message includes an unlink of two or more Patient Resources
* create Patient Resources when a create is sent.
* delete Patient Resources when a delete is sent.
* persist updates when other updates to Patient Resources are made.

#### 3.93.4.2 Mobile Patient Identity Feed Response

##### 3.93.4.2.1 Trigger Events

A Consumer sends the Mobile Patient Identity Feed Response to the Supplier when the message is accepted.

##### 3.93.4.2.2 Message Semantics

A Consumer responds to the Mobile Patient Identity Feed Request with an HTTP Status of 2xx with a Bundle Resource with the type set to “message” and at least one entry that is a MessageHeader Resource that reports the outcome of processing the Mobile Patient Identity Feed, or an error code, 4xx or 5xx.

##### 3.93.4.2.3 Expected Actions

The Supplier has received the response and continues with its workflow.

### 3.93.5 Security Considerations

See ITI TF-1: 49.5 for security considerations for the PRIM Profile.

See ITI TF-2x: Appendix Z.8 for common mobile security considerations.

The Mobile Patient Identity Feed transaction should have both server authentication and client authentication, so that the client knows that the feed is going to the correct destination (server) and that the destination (server) knows the authenticity of the source (client). The content needs to be protected against integrity failures, and confidentiality failures. The common use of https, with server-side authentication, can address most of these requirements, however common https does not address client authentication. For this client authentication function, one could either use the mutual-authenticated-TLS found in ATNA, or OAuth mechanism found in IUA. Other solutions can be used as appropriate agreement between client and server.

#### 3.93.5.1 Security Audit Considerations

The Mobile Patient Identity Feed transaction is a Patient Record Message event as defined in ITI TF-2a: 3.20.4.1.1.1-1.

Note that the same audit message is recorded by both Supplier and Consumer. The difference being the Audit Source element. Both sides record to show consistency between message sent by the Supplier and action taken at the Consumer.

The actors involved shall record audit events according to the following:

##### 3.93.5.1.1 Supplier audit message:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Field Name | Opt | Value Constraints |
| Event  AuditMessage/ EventIdentification | EventID | M | EV(110110, DICOM, “Patient Record”) |
| EventActionCode | M | EV(message, http://hl7.org/fhir/bundle-type, “message” ) |
| *EventDateTime* | *M* | *not specialized* |
| *EventOutcomeIndicator* | *M* | *not specialized* |
| EventTypeCode | M | EV(“ITI-93”, “IHE Transactions”, “Mobile Patient Identity Feed”) |
| Source (Supplier) (1) | | | |
| Destination (Consumer) (1) | | | |
| Audit Source (Supplier) (1) | | | |
| Patient (1..N) Patient Identities in the message | | | |
| Message Identity (1) | | | |

Where:

|  |  |  |  |
| --- | --- | --- | --- |
| Source  AuditMessage/ ActiveParticipant | UserID | *U* | *not specialized* |
| AlternativeUserID | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| *UserIsRequestor* | *U* | *not specialized* |
| RoleIDCode | M | EV(110153, DCM, “Source”) |
| NetworkAccessPointTypeCode | M | “1” for machine (DNS) name, “2” for IP address |
| NetworkAccessPointID | M | The machine name or IP address. |

|  |  |  |  |
| --- | --- | --- | --- |
| Destination  AuditMessage/ ActiveParticipant | UserID | M | http endpoint URI. |
| *AlternativeUserID* | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| UserIsRequestor | M | “false” |
| RoleIDCode | M | EV(110152, DCM, “Destination”) |
| NetworkAccessPointTypeCode | M | “1” for machine (DNS) name, “2” for IP address |
| NetworkAccessPointID | M | The machine name or IP address. |

|  |  |  |  |
| --- | --- | --- | --- |
| Audit Source  AuditMessage/ AuditSourceIdentification | *AuditSourceID* | *U* | *not specialized* |
| *AuditEnterpriseSiteID* | *U* | *not specialized* |
| *AuditSourceTypeCode* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Patient  (AuditMessage/ ParticipantObjectIdentification)  (1..N) | ParticipantObjectTypeCode | M | “1” (Person) |
| ParticipantObjectTypeCodeRole | M | “1” (Patient) |
| *ParticipantObjectDataLifeCycle* | *U* | *not specialized* |
| *ParticipantObjectIDTypeCode* | *M* | *not specialized* |
| *ParticipantObjectSensitivity* | *U* | *not specialized* |
| ParticipantObjectID | M | The Patient.\_id value |
| *ParticipantObjectName* | *U* | *not specialized* |
| *ParticipantObjectQuery* | *U* | *not specialized* |
| *ParticipantObjectDetail* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Message Identity  (AuditMessage/ ParticipantObjectIdentification) | ParticipantObjectTypeCode | M | EV(MessageHeader, http://hl7.org/fhir/resource-types, “MessageHeader) |
| ParticipantObjectTypeCodeRole | *U* | *not specialized* |
| *ParticipantObjectDataLifeCycle* | *U* | *not specialized* |
| ParticipantObjectIDTypeCode | *U* | *not specialized* |
| *ParticipantObjectSensitivity* | *U* | *not specialized* |
| *ParticipantObjectID* | *M* | *MessageHeader.\_id value* |
| *ParticipantObjectName* | *M* | *MessageHeader.eventUri value* |
| ParticipantObjectQuery | *U* | *not specialized* |
| ParticipantObjectDetail | *U* | *not specialized* |

##### 3.93.5.1.2 Patient Identity Manager audit message:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Field Name | Opt | Value Constraints |
| Event  AuditMessage/ EventIdentification | EventID | M | EV(110110, DICOM, “Patient Record”) |
| EventActionCode | M | EV(message, http://hl7.org/fhir/bundle-type, “message” ) |
| *EventDateTime* | *M* | *not specialized* |
| *EventOutcomeIndicator* | *M* | *not specialized* |
| EventTypeCode | M | EV(“ITI-93”, “IHE Transactions”, “Mobile Patient Identity Feed”) |
| Source (Supplier) (1) | | | |
| Destination (Consumer) (1) | | | |
| Audit Source (Consumer) (1) | | | |
| Patient (1..N) Patient Identities in the message | | | |
| Message Identity (1) | | | |

Where:

|  |  |  |  |
| --- | --- | --- | --- |
| Source  AuditMessage/ ActiveParticipant | UserID | *U* | *not specialized* |
| AlternativeUserID | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| *UserIsRequestor* | *U* | *not specialized* |
| RoleIDCode | M | EV(110153, DCM, “Source”) |
| NetworkAccessPointTypeCode | M | “1” for machine (DNS) name, “2” for IP address |
| NetworkAccessPointID | M | The machine name or IP address. |

|  |  |  |  |
| --- | --- | --- | --- |
| Destination  AuditMessage/ ActiveParticipant | UserID | M | http endpoint URI. |
| *AlternativeUserID* | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| UserIsRequestor | M | “false” |
| RoleIDCode | M | EV(110152, DCM, “Destination”) |
| NetworkAccessPointTypeCode | M | “1” for machine (DNS) name, “2” for IP address |
| NetworkAccessPointID | M | The machine name or IP address. |

|  |  |  |  |
| --- | --- | --- | --- |
| Audit Source  AuditMessage/ AuditSourceIdentification | *AuditSourceID* | *U* | *not specialized* |
| *AuditEnterpriseSiteID* | *U* | *not specialized* |
| *AuditSourceTypeCode* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Patient  (AuditMessage/ ParticipantObjectIdentification)  (1..N) | ParticipantObjectTypeCode | M | “1” (Person) |
| ParticipantObjectTypeCodeRole | M | “1” (Patient) |
| *ParticipantObjectDataLifeCycle* | *U* | *not specialized* |
| *ParticipantObjectIDTypeCode* | *M* | *not specialized* |
| *ParticipantObjectSensitivity* | *U* | *not specialized* |
| ParticipantObjectID | M | The Patient.\_id value |
| *ParticipantObjectName* | *U* | *not specialized* |
| *ParticipantObjectQuery* | *U* | *not specialized* |
| *ParticipantObjectDetail* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Message Identity  (AuditMessage/ ParticipantObjectIdentification) | ParticipantObjectTypeCode | M | EV(MessageHeader, http://hl7.org/fhir/resource-types, “MessageHeader) |
| ParticipantObjectTypeCodeRole | *U* | *not specialized* |
| *ParticipantObjectDataLifeCycle* | *U* | *not specialized* |
| ParticipantObjectIDTypeCode | *U* | *not specialized* |
| *ParticipantObjectSensitivity* | *U* | *not specialized* |
| *ParticipantObjectID* | *M* | *MessageHeader.\_id value* |
| *ParticipantObjectName* | *M* | *MessageHeader.eventUri value* |
| ParticipantObjectQuery | *U* | *not specialized* |
| ParticipantObjectDetail | *U* | *not specialized* |

Add Section 3.94

## 3.94 Subscribe to Patient Updates [ITI-94]

### 3.94.1 Scope

The Subscribe to Patient Updates transaction allows a Patient Identity Subscriber to subscribe to a Mobile Patient Resource Feed depending on the requested criteria.

### 3.94.2 Actor Roles

Table 3.94.2-1: Actor Roles

|  |  |
| --- | --- |
| **Actor:** | Patient Identity Subscriber |
| **Role:** | Sends a Subscription request to the Patient Identity Manager |
| **Actor:** | Patient Identity Manager |
| **Role:** | Accepts a Subscription request and returns where the Subscription can be accessed. |

### 3.94.3 Referenced Standards

* HL7 FHIR standard Release 4 http://hl7.org/fhir/R4/index.html

### 3.94.4 Interaction Diagram

The Patient Identity Manager shall support all these interactions. The Patient Identity Subscriber shall utilize the Subscribe to Patient Updates Request and may utilize other interactions as required by its application workflow.

Subscribe to Patient Updates Response

Subscribe to Patient Updates Request

Patient Identity Subscriber

Patient Identity Manager

Get Patient Subscription Response

Get Patient Subscription Request

Enable/Disable Patient Subscription Response

Enable/Disable Patient Subscription Request

Delete Patient Subscription Response

Delete Patient Subscription Request

#### 3.94.4.1 Subscribe to Patient Updates Request Message

The Subscribe to Patient Updates message is a FHIR create operation on a Subscription Resource.

##### 3.94.4.1.1 Trigger Events

A Patient Identity Subscriber triggers a Subscribe to Patient Updates Request to a Patient Identity Manager according to the business rules in its system. These business rules are outside the scope of this transaction.

##### 3.94.4.1.2 Message Semantics

A Patient Subscriber initiates a FHIR create request using HTTP POST as defined at <https://www.hl7.org/fhir/R4/http.html#create> on a Subscription Resource as defined at <https://www.hl7.org/fhir/R4/subscription.html>.

A Patient Identity Manager shall support accepting a request for both the JSON and the XML messaging formats as defined in FHIR. A Patient Subscriber shall send either the JSON or the XML messaging formats as defined in FHIR. See ITI TF-2x: Appendix Z.6 for more details.

See ITI TF-2x: Appendix W for informative implementation material for this transaction.

##### 3.94.4.1.2.1 FHIR Subscription Resource Constraints

A Patient Identity Subscriber shall create a Subscription Resource. The Subscription Resource shall be further constrained as described in Table 3.94.4.1.2.1-1. The Element column in Table 3.94.4.1.2.1-1 references the object model defined at <https://www.hl7.org/fhir/R4/subscription.html#resource>.

Table 3.94.4.1.2.1-1: Subscription Resource Constraints

| Element  &  Cardinality | Constraints |
| --- | --- |
| channel.type  [1..1] | The type shall be “message.” |
| channel.endpoint  [1..1] | The endpoint must be a defined URL. |
| channel.payload  [1..1] | The payload shall be either:  application/fhir+json  application/fhir+xml |
| status  [1..1] | The status shall be “requested” |
| contact  [0..\*] | The contact for the subscription. |
| contact.system  [1..1] | The system of the contact value. |
| contact.value  [1..1] | The value where the contact can be reached. |
| criteria  [1..1] | See Section 3.94.4.1.2.1.1 |

##### 3.94.4.1.2.1.1 criteria Constraints

The values for criteria enable

The Patient Identity Subscriber shall support the ability to subscribe with at least one of thsending subscriptions with one:

The Patient Identity Manager shall support processing subscriptions with these criteria:

* Patient – to subscribe to all Patient updates
* Patient?\_id=X – to subscribe to updates for a single Patient
* Patient?organization=X – to subscribe to updates for Patients related to a single Organization
* Patient?identifier=X – to subscribe to updates for Patients based on their identifier, including limiting the subscription by identifier.system

##### 3.94.4.1.3 Expected Actions

A Patient Identity Manager shall accept the request, and return an HTTP 201 response when the Subscription is created or an error code with an OperationOutcome if an error occurs as per <https://www.hl7.org/fhir/http.html#create>.   
A Patient Identity Manager shall store the Subscription Resource and create a job to manage the subscription. How it creates and manages the job is not specified by IHE. When the job has been activated, the Subscription Resource status shall be changed to “active.”

When the condition in Subscription.criteria is satisfied and Subscription.status is “active, the Patient Identity Manager shall use the Mobile Patient Identity Feed [ITI-93] to send updates to the Patient Identity Consumer endpoint defined in the Subscription.channel.

If an error occurs at any time with an active subscription, the Patient Identity Manager shall update the Subscription Resource and set the status to “error” and the error element with the error message. The Patient Identity Subscriber may use the Get Patient Subscription Request to get the current status of the Subscription. See Section 3.94.4.3.

#### 3.94.4.2 Subscribe to Patient Updates Response

##### 3.94.4.2.1 Trigger Events

A Patient Identity Manager sends the Subscribe to Patient Updates Response to the Patient Subscriber when the subscription request is received.

##### 3.94.4.2.2 Message Semantics

A Patient Identity Manager responds to the Subscribe to Patient Updates Request with an HTTP Status of 201 with the Location header set to the created Subscription Resource or an error as defined at <https://www.hl7.org/fhir/http.html#create>.

##### 3.94.4.2.3 Expected Actions

A Patient Identity Subscriber has received the response and continues with its workflow. It should maintain the returned logical id so the Subscription Resource can be queried for status, disabled, or deleted later.

#### 3.94.4.3 Get Patient Subscription Request/Response Message

A Patient Identity Subscriber can retrieve from the Patient Identity Manager the current details of a subscription by accessing the Location returned by the Subscribe to Patient Updates Response as defined at <https://www.hl7.org/fhir/http.html#read> on the Subscription Resource.

A Patient Identity Manager shall…

#### 3.94.4.4 Enable/Disable Patient Subscription Request/Response Message

A Patient Subscriber can enable or disable a subscription on the Patient Identity Manager by accessing the Location returned by the Subscribe to Patient Updates Response as defined at <https://www.hl7.org/fhir/http.html#update> on the Subscription Resource. This can be used to temporarily disable the subscription by changing the status to “off” or re-enable a subscription by changing the status to “requested.”

A Patient Identity Manager shall suspend a subscription when the status is “off.”

The Patient Identity Manager shall handle changes with a status of “requested” as per Section 3.94.4.1.3.

#### 3.94.4.5 Delete Patient Subscription Request/Response Message

A Patient Subscriber can delete a subscription from the Patient Identity Manager by accessing the Location returned by the Subscribe to Patient Updates Response as defined at <https://www.hl7.org/fhir/http.html#delete> on the Subscription Resource.

A Patient Identity Manager shall stop sending the Mobile Patient Identity Feed to the Patient Identity Consumer endpoint defined in the Subscription*.*channel.

### 3.94.5 Security Considerations

See ITI TF-1: Section 49.5 for security considerations for the PRIM Profile.

See ITI TF-2x: Appendix Z.8 for common mobile security considerations.

The subscription is made by the Patient Subscriber actor, which must be authorized at the Patient Identity Manager to request subscriptions. This authorization is valid at the time the Subscribe to Patient Update transaction request/response. The timeout associated with the client authorization does not impact the life of the subscription. However, the Patient Subscriber identity has no impact on the resulting Mobile Patient Identity Feed endpoint authentication or authorization. There is no communication of security credentials for the Mobile Patient Identity Feed transaction within the Subscribe to Patient Update transactions.

#### 3.94.5.1 Security Audit Considerations

The Subscribe to Patient Updates transaction is a REST Information event as defined in ITI TF-2a: 3.20.4.1.1.1-1.

Note that the same audit message is recorded by both Patient Subscriber and Patient Identity Manager, the difference being the Audit Source element. Both actors audit this transaction to show consistency between the request by the Patient Subscriber and the action taken by the Patient Identity Manager.

The actors involved shall record audit events according to the following:

##### 3.94.5.1.1 Patient Subscriber audit message:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Field Name | Opt | Value Constraints |
| Event  AuditMessage/ EventIdentification | EventID | M | EV(“rest”, http://terminology.hl7.org/CodeSystem/audit-event-type, “rest”) |
| EventActionCode | M | code - one of (create, read, update, delete) system - http://hl7.org/fhir/restful-interactions |
| *EventDateTime* | *M* | *not specialized* |
| *EventOutcomeIndicator* | *M* | *not specialized* |
| EventTypeCode | M | EV(“ITI-94”, “IHE Transactions”, “Subscribe to Patient Updates”) |
| Source (Patient Subscriber) (1) | | | |
| Human Requestor (0..n) | | | |
| Destination (Patient Identity Manager) (1) | | | |
| Audit Source (Patient Subscriber) (1) | | | |
| Patient (0..1) Patient if specific. | | | |
| Query Parameters (1) | | | |

Where:

|  |  |  |  |
| --- | --- | --- | --- |
| Source  AuditMessage/ ActiveParticipant | UserID | *U* | *not specialized* |
| AlternativeUserID | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| *UserIsRequestor* | *U* | *not specialized* |
| RoleIDCode | M | EV(110153, DCM, “Source”) |
| NetworkAccessPointTypeCode | M | “1” for machine (DNS) name, “2” for IP address |
| NetworkAccessPointID | M | The machine name or IP address. |

|  |  |  |  |
| --- | --- | --- | --- |
| Human Requestor (if known)  AuditMessage/ ActiveParticipant | UserID | M | Identity of the human that initiated the transaction. |
| *AlternativeUserID* | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| *UserIsRequestor* | *U* | *not specialized* |
| RoleIDCode | U | Access Control role(s) the user holds that allows this transaction. |
| *NetworkAccessPointTypeCode* | *U* | *not specialized* |
| *NetworkAccessPointID* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Destination  AuditMessage/ ActiveParticipant | UserID | M | http endpoint URI. |
| *AlternativeUserID* | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| UserIsRequestor | M | “false” |
| RoleIDCode | M | EV(110152, DCM, “Destination”) |
| NetworkAccessPointTypeCode | M | “1” for machine (DNS) name, “2” for IP address |
| NetworkAccessPointID | M | The machine name or IP address. |

|  |  |  |  |
| --- | --- | --- | --- |
| Audit Source  AuditMessage/ AuditSourceIdentification | *AuditSourceID* | *U* | *not specialized* |
| *AuditEnterpriseSiteID* | *U* | *not specialized* |
| *AuditSourceTypeCode* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Patient  (AuditMessage/ ParticipantObjectIdentification) | ParticipantObjectTypeCode | M | “1” (Person) |
| ParticipantObjectTypeCodeRole | M | “1” (Patient) |
| *ParticipantObjectDataLifeCycle* | *U* | *not specialized* |
| *ParticipantObjectIDTypeCode* | *M* | *not specialized* |
| *ParticipantObjectSensitivity* | *U* | *not specialized* |
| ParticipantObjectID | M | The Patient.\_id value |
| *ParticipantObjectName* | *U* | *not specialized* |
| *ParticipantObjectQuery* | *U* | *not specialized* |
| *ParticipantObjectDetail* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Query Parameters  (AuditMessage/ ParticipantObjectIdentification) | ParticipantObjectTypeCode | M | “2” (system object) |
| ParticipantObjectTypeCodeRole | M | “24” (query) |
| *ParticipantObjectDataLifeCycle* | *U* | *not specialized* |
| ParticipantObjectIDTypeCode | M | EV(“ITI-94, “IHE Transactions”, “Subscribe to Patient Update”) |
| *ParticipantObjectSensitivity* | *U* | *not specialized* |
| *ParticipantObjectID* | *C* | *Subscription.\_id value – when known (empty on create)* |
| *ParticipantObjectName* | *U* | *not specialized* |
| ParticipantObjectQuery | M | the Subscription.criteria value |
| ParticipantObjectDetail | *U* | *not specialized* |

##### 3.94.5.1.2 Patient Identity Manager audit message:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Field Name | Opt | Value Constraints |
| Event  AuditMessage/ EventIdentification | EventID | M | EV(“rest”, http://terminology.hl7.org/CodeSystem/audit-event-type, “rest”) |
| EventActionCode | M | code - one of (create, read, update, delete) system - http://hl7.org/fhir/restful-interactions |
| *EventDateTime* | *M* | *not specialized* |
| *EventOutcomeIndicator* | *M* | *not specialized* |
| EventTypeCode | M | EV(“ITI-94”, “IHE Transactions”, “Subscribe to Patient Updates”) |
| Source (Patient Subscriber) (1) | | | |
| Human Requestor (0..n) | | | |
| Destination (Patient Identity Manager) (1) | | | |
| Audit Source (Patient Identity Manager) (1) | | | |
| Patient (0..1) Patient if specific. | | | |
| Query Parameters (1) | | | |

Where:

|  |  |  |  |
| --- | --- | --- | --- |
| Source  AuditMessage/ ActiveParticipant | UserID | *U* | *not specialized* |
| AlternativeUserID | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| *UserIsRequestor* | *U* | *not specialized* |
| RoleIDCode | M | EV(110153, DCM, “Source”) |
| NetworkAccessPointTypeCode | M | “1” for machine (DNS) name, “2” for IP address |
| NetworkAccessPointID | M | The machine name or IP address. |

|  |  |  |  |
| --- | --- | --- | --- |
| Human Requestor (if known)  AuditMessage/ ActiveParticipant | UserID | M | Identity of the human that initiated the transaction. |
| *AlternativeUserID* | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| *UserIsRequestor* | *U* | *not specialized* |
| RoleIDCode | U | Access Control role(s) the user holds that allows this transaction. |
| *NetworkAccessPointTypeCode* | *U* | *not specialized* |
| *NetworkAccessPointID* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Destination  AuditMessage/ ActiveParticipant | UserID | M | http endpoint URI. |
| *AlternativeUserID* | *U* | *not specialized* |
| *UserName* | *U* | *not specialized* |
| UserIsRequestor | M | “false” |
| RoleIDCode | M | EV(110152, DCM, “Destination”) |
| NetworkAccessPointTypeCode | M | “1” for machine (DNS) name, “2” for IP address |
| NetworkAccessPointID | M | The machine name or IP address. |

|  |  |  |  |
| --- | --- | --- | --- |
| Audit Source  AuditMessage/ AuditSourceIdentification | *AuditSourceID* | *U* | *not specialized* |
| *AuditEnterpriseSiteID* | *U* | *not specialized* |
| *AuditSourceTypeCode* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Patient  (AuditMessage/ ParticipantObjectIdentification) | ParticipantObjectTypeCode | M | “1” (Person) |
| ParticipantObjectTypeCodeRole | M | “1” (Patient) |
| *ParticipantObjectDataLifeCycle* | *U* | *not specialized* |
| *ParticipantObjectIDTypeCode* | *M* | *not specialized* |
| *ParticipantObjectSensitivity* | *U* | *not specialized* |
| ParticipantObjectID | M | The Patient.\_id value |
| *ParticipantObjectName* | *U* | *not specialized* |
| *ParticipantObjectQuery* | *U* | *not specialized* |
| *ParticipantObjectDetail* | *U* | *not specialized* |

|  |  |  |  |
| --- | --- | --- | --- |
| Query Parameters  (AuditMessage/ ParticipantObjectIdentification) | ParticipantObjectTypeCode | M | “2” (system object) |
| ParticipantObjectTypeCodeRole | M | “24” (query) |
| *ParticipantObjectDataLifeCycle* | *U* | *not specialized* |
| ParticipantObjectIDTypeCode | M | EV(“ITI-94, “IHE Transactions”, “Subscribe to Patient Update”) |
| *ParticipantObjectSensitivity* | *U* | *not specialized* |
| *ParticipantObjectID* | *C* | *Subscription.\_id value* |
| *ParticipantObjectName* | *U* | *not specialized* |
| ParticipantObjectQuery | M | the Subscription.criteria value |
| ParticipantObjectDetail | *U* | *not specialized* |

Replace Section 3.78.2

(Note: This section is currently in the PDQm Trial Implementation Supplement)

### 3.78.2 Actor Roles

Patient Identity Manager

Patient Demographics Consumer

Patient Demographics Supplier

Figure 3.78.2-1: Use Case Diagram

Table 3.78.2-1: Actor Roles

|  |  |
| --- | --- |
| **Role:** | Patient Demographics Consumer: Requests a list of patients matching the supplied set of demographics criteria (example: ID or Name) from the Patient Demographics Supplier. The Patient Demographics Consumer populates its attributes with demographic information received from the Patient Demographics Supplier. |
| **Actor(s):** | The following actors may play the role of Patient Demographics Consumer:  Patient Demographics Consumer |
| **Role:** | Patient Demographics Supplier: Returns demographic information for all patients matching the demographics criteria provided by the Patient Demographics Consumer. |
| **Actor(s):** | The following actors may play the role of Patient Demographics Supplier:  Patient Demographics Supplier  Patient Identity Manager |

Replace Section 3.83.2

(Note: This section is currently in the PIXm Trial Implementation Supplement)

### 3.83.2 Actor Roles

Patient Identity Manager

Patient Identifier Cross-reference Consumer

Patient Identifier Cross-reference Manager

Figure 3.83.2-1: Use Case Diagram

Table 3.83.2-1: Actor Roles

|  |  |
| --- | --- |
| **Role:** | Patient Identifier Cross-reference Consumer: Requests, from the Patient Identifier Cross-reference Manager, a list of patient identifiers matching the supplied Patient Identifier. |
| **Actor(s):** | The following actors may play the role of Patient Identifier Cross-reference Consumer:  Patient Identifier Cross-reference Consumer |
| **Actor:** | Patient Identifier Cross-reference Manager: Returns Cross-referenced Patient Identifiers for the patient that cross-matches the Patient Identifier criteria provided by the Patient Identifier Cross-reference Consumer. |
| **Role:** | The following actors may play the role of Patient Identifier Cross-reference Manager:  Patient Identifier Cross-reference Manager  Patient Identity Manager |

1. HL7 is the registered trademark of Health Level Seven International. [↑](#footnote-ref-1)
2. FHIR is the registered trademark of Health Level Seven International. [↑](#footnote-ref-2)