

Integrating the Healthcare Enterprise



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**IHE IT Infrastructure
Technical Framework Supplement**

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**Patient Demographics Query for Mobile
(PDQm)**

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**FHIR[®] DSTU2
Trial Implementation**

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Please verify you have the most recent version of this document. See [here](#) for Trial Implementation and Final Text versions and [here](#) for Public Comment versions.

Foreword

30 This is a supplement to the IHE IT Infrastructure Technical Framework V12.0. 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 June 2, 2016 for trial implementation and may be available for testing at subsequent IHE Connectathons. The supplement may be amended based on the results of testing. Following successful testing it will be incorporated into the IT Infrastructure
35 Technical Framework. Comments are invited and can be submitted at http://www.ihe.net/ITI_Public_Comments.

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.

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<i>Amend Section X.X by the following:</i>
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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.

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General information about IHE can be found at: <http://ihe.net>.

Information about the IHE IT Infrastructure domain can be found at: http://ihe.net/IHE_Domains.

Information about the organization of IHE Technical Frameworks and Supplements and the
50 process used to create them can be found at: http://ihe.net/IHE_Process and <http://ihe.net/Profiles>.

The current version of the IHE IT Infrastructure Technical Framework can be found at: http://ihe.net/Technical_Frameworks.

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135 **Introduction to this Supplement**

The Patient Demographics Query for Mobile (PDQm) Profile defines a lightweight RESTful interface to a patient demographics supplier leveraging technologies readily available to mobile applications and lightweight browser based applications.

140 The functionality is identical to the PDQ Profile described in the ITI TF-1:8. The differences are transport and messaging format of messages and queries. The profile leverages HTTP transport, and the JavaScript Object Notation (JSON), Simple-XML, and Representational State Transfer (REST). The payload format is defined by the HL7®¹ FHIR®² draft standard.

Using these patterns, the PDQm Profile exposes the functionality of a patient demographics supplier to mobile applications and lightweight browser applications.

145 The following list provides a few examples of how PDQm might be leveraged by implementers:

- A health portal securely exposing demographics data to browser based plugins
- Medical devices which need to access patient demographic information
- Mobile devices used by physicians (example bedside eCharts) which need to establish patient context by scanning a bracelet
- 150 • Web based EHR/EMR applications which wish to provide dynamic updates of patient demographic information such as a non-postback search, additional demographic detail, etc.
- Any low resource application which exposes patient demographic search functionality
- Any application using the MHD Profile to access documents may use PDQm to find an
155 appropriate patient identifier

This supplement is intended to be fully compliant with the HL7 FHIR specification, providing only use-case driven constraints to aid with interoperability, deterministic results, and compatibility with existing PDQ and PDQv3 Profiles.

160 Currently the HL7® FHIR® standard is in “Draft Standard for Test Use” (DSTU) and may experience a large amount of change during this phase. Readers are advised that, while the profiled components in this supplement may not accurately reflect the most recent version of the FHIR standard, implementations of PDQm will be tested as specified in this supplement. Changes to the FHIR DSTU will be integrated into this supplement via the formal IHE Change Proposal (CP) process.

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¹ HL7 is the registered trademark of Health Level Seven International.

² FHIR is the registered trademark of Health Level Seven International.

Open Issues and Questions

- 170 • Can we use the FHIR managed extension for the mother’s maiden name? The main difference is it is JUST the maiden name, not the first name. Do we really need the first name? If first, why not full? <http://hl7.org/fhir/DSTU2/extension-patient-mothersmaidenname.html>

Closed Issues

- 175 • PDQm_002: Should Patient Visit Query be included in scope? Being a RESTful transaction, wouldn’t a visit be considered a separate resource? Would we want to include this in scope for this work item?
 - Exclude until asked to include. Perhaps as a different profile.
- 180 • PDQm_003: Are there alternate standards and technologies for mobile devices besides HL7 FHIR? We should discuss potential candidate standards (other than FHIR) prior to development of Vol. 2.
 - hDATA – HL7 Defined Standard currently in DSTU, perhaps specifying a PDQ HCP based on the PDQv3 models is an alternative? What are the pros/cons of this?
 - HL7v2 over HTTP – Now in ballot for formalization
 - See the Excel file which describes the analysis
 - 185 ○ Discussed in Vienna : Felt that FHIR does what we need for this profile
- PDQm_004: Regarding Pediatrics Option, I see that PDQv3 includes the same pediatric fields as PDQ even though the field names don’t match the standard. Should this be the same, or should the field names be adapted to support the concepts found in our chosen standard?
 - 190 ○ Volume 1 – Should be technology agnostic
- PDQm_005: Should the operation of querying for a patient and “getting” a patient be listed as separate transactions or would they simply be treated as the same transaction with different search criteria?
 - 195 ○ This should be placed as a separate interaction in the volume 2 text as it is the same transaction at the profile level.
- PDQm_006: Should we include use cases verbatim in the supplement? Should they be identical to the use cases listed in PDQ or should they be supplemented with mobile specific use cases?
 - Use cases have been incorporated into this Volume 1 text.
- 200 • PDQm_008: Should the patient demographics meta-data elements include the minimum set of demographics data for PDQ or should it include demographic data that is common

- to all PDQ Profiles? Currently it contains demographics fields common to all PDQ Profiles. Additionally where should this section “live” in Volume 1?
- The demographics field table has been updated to only include minimum set of fields in PDQ and a note has been added below the table to indicate this.
- 205
- PDQm_001: How to do query (discussion for standards selection). Post a query document vs. query parameters?
 - GET parameters are a lower burden for implementers.
 - PDQm_007: Place vanilla PDQ abstract data model in the text for this supplement.
- 210
- The “value” column needs to be reworked and filled in, could use some ideas for this and/or suggestions.
 - Value has been removed and replaced with simply data elements and description as the value is often illustrated in the description
- PDQm_010: Potentially add ability to query based on multiple birth indicator/order for pediatric demographics option. Volume 2 discussion with reflection in Volume 1.
- 215
- Should the profile use multipleBirthBoolean or multipleBirthInteger?
 - Have chosen multipleBirthInteger as it can be used as an indicator field as well and mimics the multipleBirthOrder fields.
- PDQm_011: Cross profile considerations -> Move diagrams illustrating how PDQm may be implemented from the detailed proposal.
- 220
- Done
- PDQm_012: Are we limiting the profile to JSON or will we be using the XML representation of FHIR?
- JSON was initially the only format supported to reduce scope but XML wouldn't be very difficult to include.
- 225
- Infrastructure implementers wouldn't be burdened by supporting both, and it is better to give PDC an option. Captured in Volume 2 text.
- PDQm_016: Regarding the search on birth date. There may be additional guidance coming from FHIR re: dates and date searches.
- 230
- Keep it simple/compatible with PDQ/PDQv3 for now (interval only date searches).
- PDQm_018: Regarding careProvider on Patient Resource: This is primarily intended for circle of care management, is this something we want to profile out of FHIR?
 - This is extra functionality that we don't really ‘need ‘ in PDQm

- 235
- Add a note stating that additional features may be leveraged that are simply not profiled. It is acceptable behavior for clients to ignore elements that are not in the PDQM Profile.
- 240
- PDQm_020: Is there any desire to include standardized URL schemes in the appendices, or guidance on how implementers should serve their resources when implementing multiple profiles using FHIR?
 - Continue to evolve this over time rather than trying to predict future requirements
 - PDQm_009: What fields should be listed in the common PDQ query parameters table? Required only, Required and Optional (including not commonly used fields (internationally)), or all fields?
- 245
- Rework this table to reflect the fields captured in PDQm, illustrate the delta / difference from other PDQ Profiles.
 - Table has been rewritten to only reflect those parameters in PDQm. Many key parameters are common between PDQ and v3
- 250
- PDQm_021: Should PDS support both JSON and XML or should PDS have the option to support either. PDC may support either.
 - If PDS has a choice then the server would need named options for XML / JSON.
 - Writing Timeline Note: For now have written verbiage indicating server supports both and client supports one. See what feedback is from public comment to modify this.
- 255
- PDQm_017: Security requirements: The PDC in a lightweight environment may be overburdened on implementing the requirements of secure node/application however the PDS (being more robust) should be able to generate, at minimum, audits and communicate via, at minimum, a secure channel (even if it can't be mutually authenticated). I've put some verbiage to this effect the security considerations and just wanted opinions on this. Currently the Security Considerations section makes auditing optional on the PDC and mandatory on the PDS (even though not mirrored audits, IMO it is better than nothing).
- 260
- Adding to this thought, I wasn't sure what reliable mechanism there is for capturing the "source" of an audit. From my experience with audits from PDQv3 systems most source UserID just end up being the anonymous address and the NetworkAccessPointID is really the identifying piece of information.
- 265
- The audit specification in Security Considerations of ITI-78 has been adapted from ITI-47 in this supplement. The only piece of data which might be difficult to ascertain is the source User ID (in PDQ this is MSH, and in PDQv3 this is the <wsa:replyTo/> element).
- 270
- Resolution: Have made auditing optional on PDC and mandatory on PDS. Where wsa:replyTo was mentioned, the guidance has been set as not specialized.

- 275 • PDQm_023: RE: 3.78.4.2.3 : Should this text be normative or informative, currently worded as expected behavior (with shall language) i.e., should this behavior become part of testing behaviors? Do we want to keep this in the document?
 - JM: I think all of these are done or we have made a choice. So no need to leave these in Open. (exceptions have specific comment).
- 280 • PDQm_013: We should coordinate the specification of common attributes in the appendix. This would include things like:
 - Currently in Appendix Z
- 285 • PDQm_015: What is the appropriate behavior when a PDC wishes to perform a continuation (pagination) where the PDS does not support this option? This behavior is described in PDQ and PDQv3.
 - Nail down expected behaviors, esp. with continuation. Communicate that this is in the hands of the server. Perhaps better to over constrain and see what feedback is provided.
 - Has been described in expected behaviors
 - Continuation option is removed and left to FHIR requirements
- 290 • PDQm_019: The Profile resource for PDQm is currently not specified in the document. The plan is to keep it external (similar to an XSD or WSDL). Should the profile resource for PDQm be included inline in this document or would it be better suited as an external resource (or both)?
 - Both – This is useful as an implementation artifact
 - 295 ○ Is this is another transaction that would be common to all IHE profiles which will be using Profiles, and Conformance resources? Perhaps just explain this in the appendices.
 - Resolution: Place in Appendix W
- 300 • PDQm_022: RE: Complex date matching, are there any use cases where interval date matching is not sufficient for the purposes of a PDQ query?
 - Keep it compatible with PDQ and if there are any additional use cases from PDQ we can include them.
- 305 • PDQm_014: Pediatrics Option: Mother’s maiden name. Would it be applicable to simply allow any “relationship” with a parent or guardian and still fulfill the use cases within the pediatrics option? Furthermore which pattern to choose in FHIR:
 - Pose this question to the FHIR team.
 - Create an extension called “mothersMaidenName”, however this is single use extension.

- 310
 - Use the “contact” relationship. The purpose of the pediatrics option is to distinguish between a record that changes frequently, and/or to track contact details for adults related to the child.
 - Use the “RelatedPerson” resource. This is a little trickier as it will require the profiling of another resource, and it will also introduce an awkward query as Patient does not “have a” RelatedPerson, rather RelatedPerson “has a” Patient.
 - 315 ○ Using the contact relationship as it seems to support the intended use case for PDO, this has been described in the Volume 2 text
 - Currently it is stored in “contact” relationship.
- PDQ_024: FHIR mandates that server implementers support the _id parameter in the search operation. During the PDQm review of query parameters there was some discussion as to the relevance of _id in the context of PDQm. Currently the _id query parameter is minimal in its description as there are no known use cases for including it, and it may not be possible for implementers acting as a single proxy to implement or guarantee that they can fulfill such a parameter. The question is: Do we want to remove the _id search parameter?
 - 320 ○ JM: Leave _id in the profile
- 325 • PDQm_025: How does FHIR expect to mitigate potential collisions of profile resources that are stated on a particular URL?
 - This is something that we should discuss with FHIR and incorporate the guidance in this document.
- 330 • PDQm_026: This profile is our first effort in profiling HL7 FHIR. We are anticipating two types of comments. The first regarding HL7 FHIR, the second regarding our profiling of HL7 FHIR.
 - 335 ○ Please note that comments regarding HL7 FHIR itself should be submitted to HL7 by registering for an HL7 gforge account and using the form at http://gforge.hl7.org/gf/project/fhir/tracker/?action=TrackerItemAdd&tracker_id=677
 - Comments to our profiling of FHIR should be submitted to us via IHE public comment.
- 340 • PDQm_027: The PDQ query parameters for dates could be better represented using DTM. The profile currently uses what FHIR calls the “interval” matching method (i.e., 2008 becomes “any time during 2008”). This issue should be discussed through FHIR.
 - Additionally, think that the currently profiled date matching mechanism described best fits the current query parameter styles of PDQv3 and PDQ

General Introduction

345 *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

No change to Appendix A (no new actors)

Appendix B - Transaction Summary Definitions

350 *Add the following transactions to the IHE Technical Frameworks General Introduction list of Transactions:*

Transaction	Definition
Mobile Patient Demographics Query [ITI-78]	Performs a query against a patient demographics supplier using HTTP, REST, and JSON/XML message encoding.

Glossary

No additions to the Glossary.

355

Volume 1 – Profiles

Copyright Licenses

Add the following to the IHE Technical Frameworks General Introduction Copyright Section:

The HL7® FHIR® standard License can be found at <http://hl7.org/fhir/DSTU2/license.html>.

Add the following section as 8.6

360 8.6 PDQ Cross Profile Considerations

There are two additional profiles: PDQv3 (Patient Demographics Query HL7v3) and PDQm (Patient Demographics Query for Mobile), which provide similar functionality to Patient Demographics Query. These profiles adapt the Patient Demographics Query transaction of the Patient Demographics Supplier and Patient Demographics Consumer Actors for HL7v3 and HL7® FHIR® standard. ITI TF-2x: Appendix M.4 provides additional details about these Patient Demographics Query Profiles and their relationship with one another.

Add the following section as 24.6

24.6 PDQv3 Cross Profile Considerations

There are two additional profiles: PDQ (Patient Demographics Query) and PDQm (Patient Demographics Query for Mobile), which provide similar functionality to Patient Demographics Query. These profiles adapt the Patient Demographics Query transaction of the Patient Demographics Supplier and Patient Demographics Consumer Actors for HL7v2 and HL7® FHIR® standard. ITI TF-2x: Appendix M.4 provides additional details about these Patient Demographics Query Profiles and their relationship with one another.

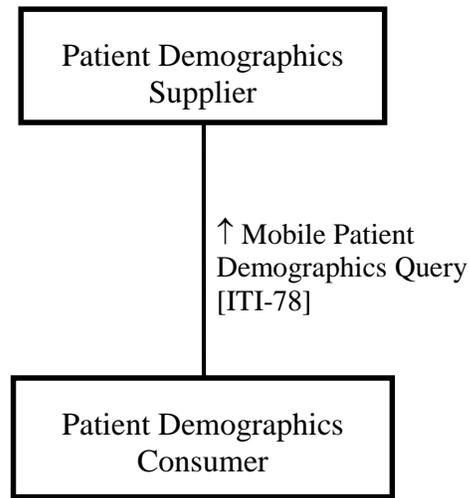
Add to new Section 38

38 PDQm –Patient Demographics Query for Mobile

380 The Patient Demographics for Mobile (PDQm) Profile provides a transaction for mobile and lightweight browser based applications to query a patient demographics supplier for a list of patients based on user-defined search criteria and retrieve a patient’s demographic information.. This profile provides a lightweight alternative to PDQ Patient Demographics Query [ITI-21] or PDQV3 Patient Demographics Query V3 [ITI-47].

38.1 PDQm Actors, Transactions, and Content Modules

385 Figure 38.1-1 shows the actors directly involved in the Patient Demographics Query for Mobile Profile and the relevant transactions between them. Note that the actors in this profile are the same as the actors defined in the PDQ Profile (ITI TF-1: 8.1).



390

Figure 38.1-1: PDQm Actor Diagram

395 Table 38.1-1 lists the transactions for each actor directly involved in the Patient Demographics Query for Mobile Profile. To claim compliance with this profile, an actor shall support all required transactions (labeled “R”).

Table 38.1-1: PDQm Profile - Actors and Transactions

Actors	Transactions	Optionality	Reference
Patient Demographics Suppler	Mobile Patient Demographics Query	R	ITI TF-2c: 3.78
Patient Demographics Consumer	Mobile Patient Demographics Query	R	ITI TF-2c: 3.78

400 The transaction defined in this profile corresponds to Patient Demographics Query [ITI-21]in the PDQ Profile (ITI TF-1: 8) and provides similar functionality. Note that there is no transaction which corresponds to the Patient Demographics and Visit Query.

38.1.1 Actor Descriptions and Actor Profile Requirements

No additional requirements.

38.2 PDQm Actor Options

405 Options that may be selected for each actor in this profile, if any, are listed in Table 38.2-1. Dependencies between options when applicable are specified in notes.

Table 38.2-1: Patient Demographics Query for Mobile - Actors and Options

Actor	Option Name	Reference
Patient Demographics Consumer	Pediatric Demographics Option	ITI TF-1:38.2.1

410 38.2.1 Pediatric Demographics Option

The experience of immunization registries and other public health population databases has shown that retrieving patient records for an individual person in environments with large proportions of pediatric records requires additional demographic data.

415 Information about the mother of the patient or a household telephone number is helpful in retrieving records in large population databases where data quality may be uneven.

Certain other demographics fields are important to include in the query response as they may be used by the Patient Demographics Consumer in verifying the identity of the patient; in particular, they aid in distinguishing records for twins, triplets, and so forth.

420 Pediatric Demographics makes use of the following six additional demographic fields to aid record matching in databases with many pediatric records.

Field	Reason for Inclusion	Value
Mother's Maiden Name	Any information about the mother is helpful in making a match	Helps create true positive matches
Patient Home Telephone	A telecom helps match into the right household	Helps create true positive matches
Patient Multiple Birth Indicator	Indicates this person is a multiple – twin, triplet, etc.	Helps avoid false positive matches of multiples
Patient Birth Order	Distinguishes among those multiples.	Helps avoid false positive matches of multiples
Last Update Date/Time, Last Update Facility	These fields, although not strictly demographic, can effectively substitute when multiple birth indicator and birth order are not collected. They indirectly provide visit information. Provider visits on the same day may likely indicate two children brought to a doctor together.	Helps avoid false positive matches of multiples

425 Patient Demographics Consumers which support the Pediatric Demographics Option shall be able to provide the below listed Pediatric Demographics query parameter fields in the Patient Demographics Query transaction [ITI-78], and shall be able to receive and process any values returned for the fields identified as Pediatric Demographics.

Pediatric Demographics query parameter fields are:

- Mother’s Maiden Name
- Patient Home Telephone

430 Pediatric Demographics fields are defined as all of the following:

- Mother’s Maiden Name
- Patient Home Telephone
- Patient Multiple Birth Indicator
- Patient Birth Order
- 435 • Last Update Date/Time
- Last Update Facility

38.3 PDQm Required Actor Groupings

440 An actor from this profile (column 1) shall implement all of the required transactions and/or content modules in this profile *in addition to* all of the transactions required for the grouped actor (column 2).

Section 38.5 describes some optional groupings that may be of interest for security considerations and Section 38.6 describes some optional groupings in other related profiles.

Table 38.3-1: Patient Demographics Query for Mobile - Required Actor Groupings

PDQm Actor	Actor to be grouped with	Reference	Content Bindings Reference
Patient Demographics Supplier	None		
Patient Demographics Consumer	None		

445

38.4 PDQm Overview

38.4.1 Concepts

The PDQm Profile supports all of the use cases of PDQ while keeping the technology as lightweight as possible. Example uses include:

- 450
- Mobile devices used by physicians (for example: a mobile app for electronic patient charts) which need to establish patient context by scanning a bracelet,
 - Web based EHR/EMR applications which wish to provide dynamic updates of patient demographic information such as a non-postback search, additional demographic detail, etc.
- 455
- A document source/consumer wishing to perform an operation in the IHE Mobile access to Health Documents (MHD) Profile, where patient ID in the appropriate patient ID domain needs to be resolved by the source/consumer,
 - A health portal securely exposing demographics data to browser based plugins,
 - Medical devices which need to access patient demographic information.
- 460
- Each of these specific use cases is generalized into two general use cases. The first is one where a system must obtain patient demographics to populate a user interface via a known demographic field (such as bracelet ID) or search parameters provided by a user. The second is as a prerequisite step whereby an application must obtain an identifier from another patient ID domain in order to complete another workflow.
- 465
- This profile is applicable for use by any application which requires access to patient demographics where lightweight REST/JSON or REST/XML is a more suitable technology than traditional PDQ or PDQv3 Profiles.

38.4.2 Use Cases

38.4.2.1 Use Case #1: Patient Information Entering at Bedside

- 470
- In this use case an admitted patient is assigned a bed, and may not be able to provide positive ID information. The nurse uses the PDQm Profile to establish patient context.

38.4.2.1.1 Patient Information Entering at Bedside Use Case Description

- 475
- An admitted patient is assigned to a bed. The patient may or may not be able to provide positive ID information. The nurse needs to enter patient identity information into some bedside equipment to establish the relationship of the assigned bed to the patient. The equipment issues a query for a patient pick list to a patient demographics supplier that provides data for a patient pick list. Search criteria entered by the nurse might include one or more of the following:
- Partial or complete patient name (printed on the patient record or told by the patient)
 - Patient ID (this may be obtained from printed barcode, a bed-side chart, etc.)
- 480
- Patient ID entry or scan.
 - Date of birth / age range

The system returns a list of patients showing Patient ID, full name, age, sex and displays the list to the nurse. The nurse then selects the appropriate record to enter the patient identity information into the bedside equipment application.

485 **38.4.2.2 Use Case #2: Patient Identity Information Entering in Physician Offices**

In this use case a patient visits a physician for the first time. The physician system will use the PDQm Profile to import demographics information into the local application.

38.4.2.2.1 Patient Identity Information Entering in Physician Offices Use Case Description

490 A patient visits a physician office for the first time. The nurse needs to register the patient; in doing so, it is desired to record the patient's demographic data in the practice management information system (PMIS). The physician office is connected to a hospital enterprise's central patient registry. The nurse issues a patient query request to the central patient registry acting as a Patient Demographics Supplier, with some basic patient demographics data as search criteria. In
495 the returned patient list, she picks an appropriate record for the patient, including the hospital's Patient ID, to enter into the PMIS. (Note the PMIS uses a different Patient ID domain than that of the central patient registry.)

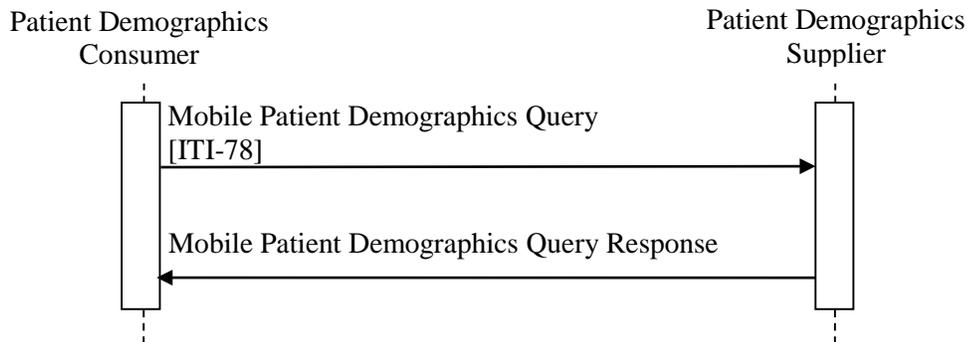
38.4.2.3 Use Case #3: Patient Demographics Query in an Enterprise with Multiple Patient ID Domains

500 In this use case a lab system obtains identities from multiple Patient ID domains for the purpose of reporting results.

38.4.2.3.1 Patient Demographics Query in an Enterprise with Multiple Patient ID Domains Use Case Description

505 A lab technician enters some basic demographics data (e.g., patient name) into a lab application to query a patient demographics supplier to identify a patient for his lab exams. As the application also needs the patient identifier in another Patient ID Domain in the enterprise for results delivery, the application is configured to query for Patient IDs from other domains in the query response.

38.4.3 Basic Process Flow in Patient Demographics Query for Mobile Profile



510

Figure 38.4.3-1: Basic Process Flow in PDQm Profile

38.5 PDQm Security Considerations

515 The challenges of security and privacy controls within a mobile environment are unique, simply because the devices are harder to physically control. In other uses of the HTTP/REST pattern, applications are accessing far less sensitive information than patient demographics. The PDQm Profile provides access to the demographics managed in healthcare. These factors present a unique and difficult challenge for the security model. It is recommended that application developers utilize a Risk Assessment in the design of the applications, and that the operational environment utilize a Risk Assessment in the design and deployment of the operational environment. See FHIR DSTU2 Security <http://hl7.org/fhir/DSTU2/security.html>.

520 There are many reasonable methods of security for interoperability transactions which can be implemented without modifying the characteristics of the PDQm Profile transactions. The use of TLS is encouraged, specifically the use of the ATNA Profile (see ITI TF-1:9).

525 User authentication on mobile devices and browsers is typically handled by more lightweight authentication schemes such as HTTP Authentication, OAuth 2.0, or OpenID Connect. IHE has a set of profiles for user authentication including: Enterprise User Authentication (EUA) on HTTP-based devices, with bridging to Cross-Enterprise User Assertion (XUA) for the backend, and Internet User Authentication (IUA) for REST-based authentication. In all of these cases, the network communication security, and user authentication are layered in the HTTP transport layer and do not modify the interoperability characteristics defined in the PDQm Profile.

530 The Patient Demographics Supplier in PDQm shall support the [ITI-20] Record Audit Transaction to provide ATNA Profile Security Audit logging. See ITI TF-2c: 3.78.5.1 and ITI TF-2a: 3.20. Support for ATNA-based audit logging by Patient Demographics Consumers on mobile devices and lightweight browser applications may be beyond the ability of the constrained environment. This would mean that the operational environment must choose how to mitigate the risk of relying only on the service side audit logging.

535

540 It is recommended that Patient Demographics Consumer and Patient Demographics Supplier
Actors implement the Internet User Authentication (IUA) Profile, incorporating the subject of
the IUA token in audit messages.

545 The Resource URL pattern defined in this profile means many requests will include Patient ID
and/or additional demographics parameters for query. The advantage of this pattern is ease of
implementation and clear distinction of a patient's identity. The URL pattern does present a risk
when using typical web server audit logging of URL requests and browser history. In both of
these cases the URL with the Patient ID and/or demographic query parameters is clearly visible.
These risks need to be mitigated in system or operational design.

38.6 PDQm Cross Profile Considerations

550 When the Patient Demographics Supplier is grouped with actors in other IHE profiles that
perform patient information reconciliation activities (e.g., the ADT Actor in the IHE Radiology
Scheduled Workflow.b Profile), the Patient Demographics Supplier may use the updated
information to respond to PDQm Queries. In addition the Patient Demographics Query for
Mobile Profile may play an integral workflow role in conjunction with other IHE profiles.

555 Those systems that manage patient demographics could implement the Patient Demographics
Supplier in all three profiles: PDQ, PDQv3, and PDQm. In this way the Patient Demographics
Consumer can choose the technology stack that best fits. ITI TF-2x: Appendix M.4 provides
additional details about Patient Demographics Query Profiles and their relationship with one
another.

560 The Patient Demographics Supplier may act as a proxy to an existing PDQ or PDQv3
environment as shown in Figures 38.6-1 and 38.6-2.

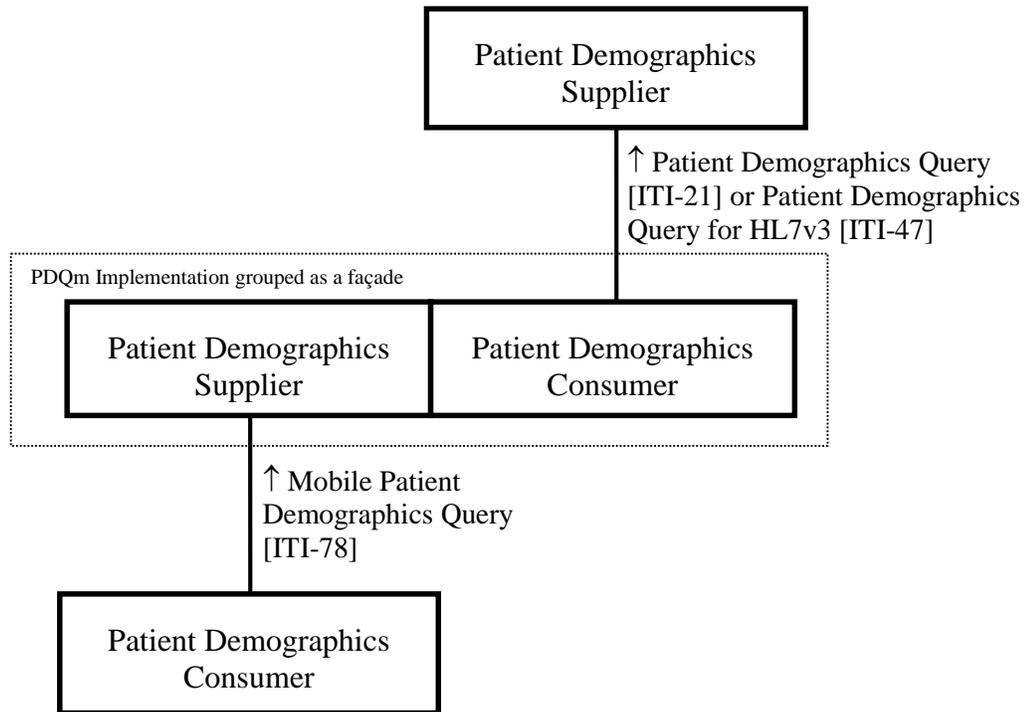


Figure 38.6-1: Implementing PDQm as a gateway

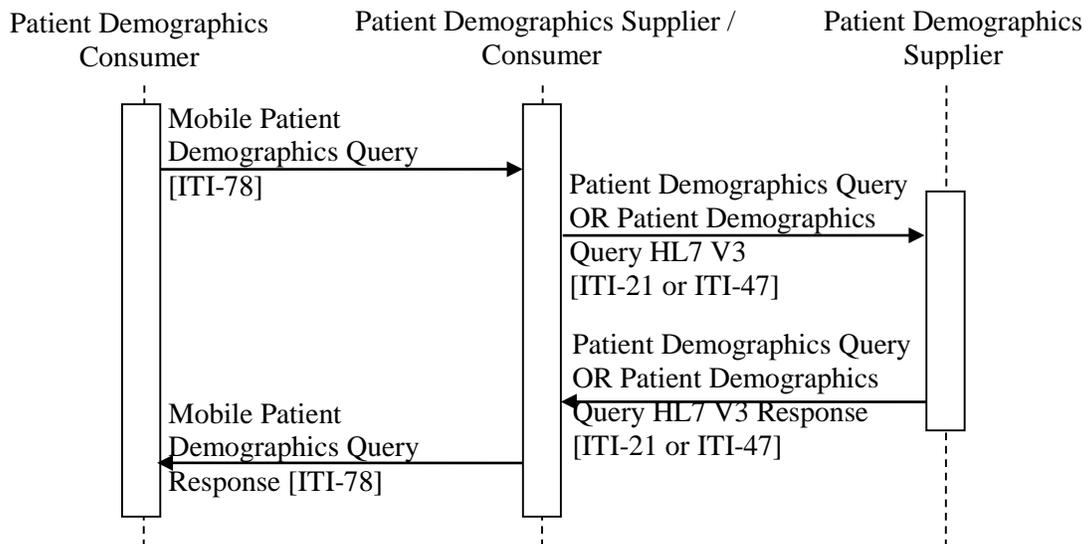


Figure 38.6-2: Sample PDQm gateway process flow

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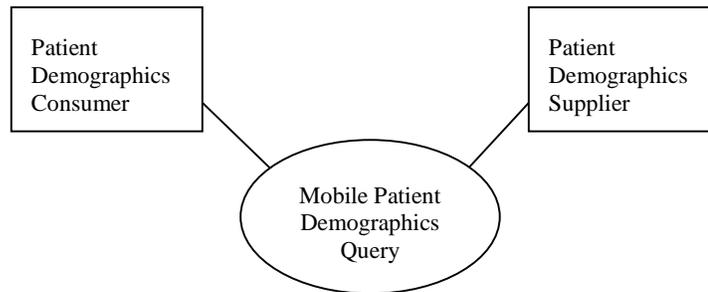
3.78 Mobile Patient Demographics Query [ITI-78]

570 This section corresponds to Transaction ITI-78 of the IHE IT Infrastructure Technical Framework. Transaction ITI-78 is used by the Patient Demographics Consumer and Patient Demographics Supplier Actors.

3.78.1 Scope

575 This transaction is used by the Patient Demographics Consumer to solicit information about patients whose demographics data match data provided in the query parameters on the request message. The request is received by the Patient Demographics Supplier. The Patient Demographics Supplier processes the request and returns a response in the form of demographics information for the matching patients.

3.78.2 Actor Roles



580

Figure 3.78.2-1: Use Case Diagram

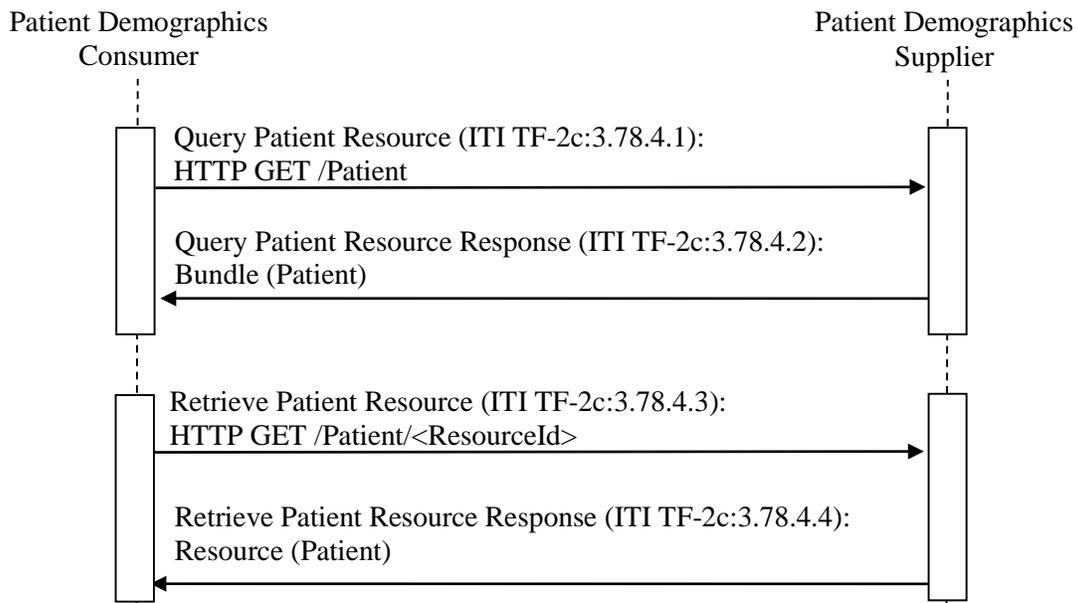
Table 3.78.2-1: Actor Roles

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

585 **3.78.3 Referenced Standards**

HL7 FHIR	HL7® FHIR® standard DSTU2 (v1.0.2) http://hl7.org/fhir/DSTU2/index.html
IETF RFC 2616	Hypertext Transfer Protocol – HTTP/1.1
IETF RFC 7540	Hypertext Transfer Protocol – HTTP/2
IETF RFC 3986	Uniform Resource Identifier (URI): Generic Syntax
IETF RFC 4627	The application/json Media Type for JavaScript Object Notation (JSON)
IETF RFC 6585	Additional HTTP Status Codes

3.78.4 Interaction Diagram



590 **3.78.4.1 Query Patient Resource message**

This message represents an HTTP GET parameterized query from the Patient Demographics Consumer to the Patient Demographics Supplier.

3.78.4.1.1 Trigger Events

595 When a Patient Demographics Consumer needs to select a patient based on demographic information about patients whose information matches a minimal set of known data, it issues a Query Patient Resource.

3.78.4.1.2 Message Semantics

The Query Patient Resource is conducted by the Patient Demographics Consumer by executing an HTTP GET against the Patient Demographics Supplier's Patient Resource URL.

600 The search target follows the FHIR http specification, addressing the Patient Resource type <http://hl7.org/fhir/DSTU2/http.html>:

```
GET [base]/[type]{?[parameters]{&_format=[mime-type]}}
```

605 This URL is configurable by the Patient Demographics Supplier and is subject to the following constraints.

The [parameters] represents a series of encoded name-value pairs representing the filter for the query specified in Section 3.78.4.1.2.1, as well as control parameters to modify the behavior of the Patient Demographics Supplier such as response format, or pagination.

3.78.4.1.2.1 Query Search Parameters

610 The Patient Demographics Consumer may supply and the Patient Demographics Supplier shall be capable of processing all query parameters listed below. See <http://hl7.org/implement/standards/fhir/http.html#mime-type> for details on encoding.

Patient Demographics Suppliers may choose to support additional query parameters beyond the subset listed below. Such parameters are considered out of scope for this transaction.

615 **_id Search Parameter**

This parameter of type *string*, when supplied, represents the resource identifier for the Patient Resource being queried. See ITI TF-2x: Appendix Z.2.3 for use of the *string* data type. Note: A search using *_id* is always an exact match search.

identifier Search Parameter

620 This repeating parameter of type *token*, when supplied, specifies an identifier associated with the patient whose information is being queried (e.g., a local identifier, account identifier, etc.). See ITI TF-2x: Appendix Z.2.2 for use of the *token* data type.

625 If multiple instances of this parameter are provided in the query, the query represents a logical AND condition (i.e., all of the associated identifiers must match). For example, a query searching for patients having identifier145 assigned by authority "1.2.3.4" and SSN 123456789 would be represented as:

```
?identifier=urn:oid:1.2.3.4|145&identifier=urn:oid:2.16.840.1.113883.4.1|123456789
```

630 If no *system* portion of the identifier parameter is specified, then the matching would be performed on any identifier regardless of issuing system. The identifier specified in this parameter is expressed using the *token* search parameter type. Please see ITI TF-2x: Appendix Z.2.2 for use of the *token* data type for patient identifiers.

family and given Search Parameters

635 These parameters of type `string`, when supplied, specify the name of the person whose information is being queried. For this parameter the Patient Demographics Consumer may use either family name, given name or a combination of both names to filter by family, given or family and given names respectively. See ITI TF-2x: Appendix Z.2.3 for use of the `string` data type.

640 Matching on these parameters is performed on a single name. Repetitions of each of the `family` or `given` parameters are interpreted to mean multiple parts of the same name. For example, a query for John Jacob Jingleheimer Schmidt would be represented as:

?family=Jingleheimer&family=Schmidt&given=John&given=Jacob

The specific mechanics of name matching such as phonetic matches, synonyms (i.e., John matches Johnny) or partial name matches are not specified here and may be configured to match site specific rules surrounding partial name matching.

645 **birthdate Search Parameter**

This parameter of type `date`, when supplied, specifies the birth date and time of the person whose information is being queried.

650 The Patient Demographics Consumer shall use the date and interval mechanism described in HL7 FHIR (<http://hl7.org/fhir/DSTU2/search.html#date>) to indicate a specific date of birth or a date that lies within the range specified by the parameter.

address Search Parameter

655 This parameter of type `string`, when supplied, specifies one or more address parts associated with the person whose information is being queried. For details on matching rules see ITI TF-2x: Appendix Z.2.3 .

gender Search Parameter

660 This parameter of type `token`, when supplied, specifies the administrative gender of the person whose information is being queried. For this parameter item, a single administrative gender code from value set <http://hl7.org/fhir/DSTU2/valueset-administrative-gender.html> shall be specified as the only value of the token. See ITI TF-2x: Appendix Z.2.2 for use of the `token` data type.

3.78.4.1.2.2 Pediatric Demographics Query Search Parameters

Patient Demographics Consumers supporting the Pediatric Demographics Option shall be able to produce all query parameters listed.

665 **mothersMaidenName.given / mothersMaidenName.family**

These parameters of type `string`, when supplied, specify the name of a patient's mother's maiden name. The semantics of these parameters are identical to those listed in Section 3.78.4.1.2.1. See ITI TF-2x: Appendix Z.2.3 for use of the `string` data type.

telecom

670 This parameter of type *string*, when supplied, specifies the telecommunications address for the person whose information is being queried. The telecom value shall match the telecommunications address' value irrespective of its intended use.

multipleBirthInteger

675 This parameter of type *integer*, when supplied, filters results on the order of birth if the birth was part of a multiple. See http://hl7.org/fhir/DSTU2/patient-definitions.html#Patient.multipleBirth_x for details.

3.78.4.1.2.3 Parameter Modifiers

680 Patient Demographics Suppliers shall support the “:exact” parameter modifier on all query parameters of type *string*. When supplied by the Patient Demographics Consumer, the “:exact” parameter modifier instructs the Patient Demographics Supplier that exact matching should be performed.

The Patient Demographics Consumer should not use and Patient Demographics Supplier may ignore any additional parameter modifiers listed in the FHIR standard, which are considered out of scope in the context of this transaction.

685 3.78.4.1.2.4 Populating Which Domains are Returned

The Patient Demographics Consumer may constrain the domains from which patient identifiers are returned from the Patient Demographics Supplier in the resulting bundle. The Patient Demographics Consumer shall convey this by specifying the patient identity domains in the system component of repeating *identifier* parameters using the OR format:

690 **&identifier=urn:oid:1.2.3|urn:oid:4.5.6|**

For example, a Patient Demographics Consumer wishing to filter for patients with a last name of SMITH having identifiers from an identity domain with OID 1.2.3.4.5 would convey this search as:

?family=SMITH&identifier=urn:oid:1.2.3.4.5|

695 The Patient Demographics Consumer shall populate the patient identity domain portion of the token with values described in ITI TF-2x: Appendix E.3.

3.78.4.1.2.5 Populating Expected Response Format

700 The FHIR standard provides encodings for responses as either XML or JSON. Patient Demographics Suppliers shall support both message encodings, whilst Patient Demographics Consumers shall support one and may support both.

See ITI TF-2x: Appendix Z.6 for details.

3.78.4.1.3 Expected Actions

705 The Patient Demographics Supplier shall return demographic records that reflect the match to all of the search criteria provided by the Patient Demographics Consumer. The Patient Demographics Supplier shall respond with a Query Patient Resource Response synchronously (i.e., on the same connection as was used to initiate the request).

710 The handling of phonetic issues, alternate spellings, upper and lower case, partial matching and accented characters, etc. if deemed appropriate shall be supported by the Patient Demographics Supplier rather than by the Patient Demographics Consumer. At minimum, the Patient Demographics Supplier shall return all exact matches to the query parameters sent by the Patient Demographics Consumer; IHE does not further specify matching requirements. If the Patient Demographics Supplier is unable to perform, case insensitive, partial matches, it shall indicate this in its Conformance Resource (see ITI TF-2x: Appendix Z.4).

715 The information provided by the Patient Demographics Supplier to the Patient Demographics Consumer is a list of matching patients from the Patient Demographics Supplier's information source. The mechanics of the matching algorithms used are internal to the Patient Demographics Supplier and are outside the scope of this framework.

720 The Patient Demographics Supplier shall support at least one patient identifier domain and may support multiple identifier domains. Section 3.78.4.1.2.4 describes how the Patient Demographics Consumer may filter results based on identifiers from one or more patient identifier domains. Query responses may return patient identifiers from one or multiple patient identifier domains.

725 If the Patient Demographics Consumer supplied a query parameter, or used a query parameter modifier which the Patient Demographics Supplier is not capable of utilizing, then the Patient Demographics Supplier shall respond with an **HTTP 400** (Bad request) status code and an `OperationOutcome` resource indicating the parameters in error.

The Patient Demographics Supplier shall respond to the query request as described by the following cases with a Query Patient Resource Response message described in Section 3.78.4.2, and shall behave according to the cases listed below:

730 **Case 1:** The Patient Demographics Supplier finds in its information source, at least one patient record matching the criteria sent as HTTP query parameters. No patient identifier domains are requested via the mechanism specified as specified in Section 3.78.4.1.2.4.

HTTP 200 (OK) is returned as the HTTP status code.

735 A Resource Bundle is returned representing the result set. The Patient Demographics Supplier populates the `total` property of the bundle with the total number of matching results. One `entry` is returned from the Patient Demographics Supplier for each Patient Resource found.

740 **Case 2:** The Patient Demographics Supplier finds at least one patient record matching the criteria sent in the query parameters. One or more patient identifier domains are requested via the mechanism specified in Section 3.78.4.1.2.4, and Patient Demographics Supplier recognizes all domains. **HTTP 200** (OK) is returned as the HTTP status code.

745 The Patient Demographics Supplier performs its matching and returns a bundle as described in Case 1. The Patient Demographics Supplier eliminates identifiers from the result set which do not exist in the list specified per Section 3.78.4.1.2.4 (domains to be returned). If all entries in the list of patient identifiers are eliminated, which would leave the patient identifiers list empty, then the entry shall not be present in the response bundle at all.

Case 3: The Patient Demographics Supplier fails to find in its information source, any patient record matching the criteria sent as HTTP query parameters.

HTTP 200 (OK) is returned as the HTTP status code.

750 A Resource Bundle is returned representing the zero result set. The Patient Demographics Supplier populates the `total` with a value of 0 indicating no results were found. No `entry` attributes are provided in the result.

Case 4: The Patient Demographics Supplier does not recognize one or more of the domains specified per Section 3.78.4.1.2.4.

HTTP 404 (Not Found) is returned as the HTTP status code.

755 An `OperationOutcome` Resource is returned indicating that the patient identity domain is not recognized in an `issue` having:

Attribute	Value
severity	error
code	{ http://hl7.org/fhir/issue-type.html , value}
diagnostics	“targetSystem not found”

760 The `OperationOutcome` Resource may indicate the query parameter used and the domain in error within the `diagnostics` attribute. See FHIR DSTU2 discussion of search error handling <http://hl7.org/fhir/DSTU2/search.html#errors>

Case 5: The Patient Demographics Supplier is not capable of producing a response in the requested format specified by `_format` parameter (specified in Section 3.78.4.1.2.5).

765 **HTTP 406** (Not Acceptable) is returned as the HTTP status code.

An `OperationOutcome` Resource is returned indicating that the requested response format is not supported in an `issue` having:

Attribute	Value
severity	error
code	{ http://hl7.org/fhir/issue-type.html , ,not-supported}

770 The Patient Demographics Supplier may be capable of servicing requests for response formats not listed in Section 3.78.4.1.2.5, but shall, at minimum, be capable of producing XML and JSON encodings.

The Patient Demographics Supplier may return other HTTP status codes to represent specific error conditions. When HTTP error status codes are returned by the Patient Demographics
775 Supplier, they shall conform to the HTTP standard RFC 2616. Their use is not further constrained or specified by this transaction.

3.78.4.2 Query Patient Resource Response message

3.78.4.2.1 Trigger Events

780 The Patient Demographics Supplier found patient demographics matching the query parameters specified by the Patient Demographics Consumer as a result of a Query Patient Resource Request.

3.78.4.2.2 Message Semantics

785 The Query Patient Resource Response is sent from the Patient Demographics Supplier to the Patient Demographics Consumer as a Bundle of Patient Resources. The “content-type” of the response will depend upon the requested response format indicated by the Patient Demographics Consumer.

See ITI TF-2x: Appendix Z.6 for more details on response format handling. See ITI TF-2x: Appendix Z.7 for handling guidance for Access Denied.

790 3.78.4.2.2.1 Patient Resource Definition in the Context of Query Patient Resource Response

The components of the Patient Resource with cardinality greater than 0 (as shown below) are required, and the detailed description of the message is provided here. All other attributes of the response are optional.

795 The Patient Resource contained within the Query Patient Resource Response message is described at <http://hl7.org/fhir/DSTU2/patient.html>, and is not further constrained by this transaction.

3.78.4.2.2.2 Mother’s Maiden Name

800 Patient Demographics Suppliers shall include the mother’s maiden name, if known, in an extension named mothersMaidenName. The URL of this extension shall point to the definition of the mothersMaidenName extension definition element in the Patient Demographics Supplier’s Profile resource (see ITI TF-2x: Appendix Z.4).

For example, a demographic result being returned from a Patient Demographics Supplier “pdqm-sample”, whose mother’s maiden name is Mary Smith is illustrated below:

805

```

810 {
    "resourceType" : "Patient",
    ...
    "extension" : [
      {
        "url" : "http://pdqm-sample:8080/ITI-
815 78/Profile/pdqm#mothersMaidenName",
        "valueHumanName" : {
          "family" : [
            "Smith"
          ],
          "given" : [
820 "Mary"
          ]
        }
      }
    ]
    ...
  }

```

825

Or in XML format as:

```

830 <Patient>
    ...
    <extension url="http://pdqm-sample:8080/ITI-
78/Profile/pdqm#mothersMaidenName">
      <valueHumanName>
        <family value="Smith"/>
        <given value="Mary"/>
835 </valueHumanName>
      </extension>
    ...
  </Patient>

```

840 Additionally, the Patient Demographics Supplier shall indicate support for the mothersMaidenName within its Profile resource as illustrated below:

```
...
"extensionDefn" : [
845   {
      "code" : "mothersMaidenName",
      "contextType" : "resource",
      "context" : [ "Patient" ],
      "definition" : {
850         "short" : "Patient's mother's maiden name",
         "formal" : "The name of the patient's mother",
         "min" : 0,
         "max" : 1,
         "type" : [
855           {
             "code" : "HumanName"
           }
         ],
         "isModifier" : false
860     }
  ]
  ...
```

Or in XML format as:

```
865   ...
  <extensionDefn>
    <code value="mothersMaidenName"/>
    <contextType value="resource"/>
    <context value="Patient"/>
870    <definition>
      <short value="Patient's mother's maiden name"/>
      <formal value="The name of the patient's mother"/>
      <min value="0"/>
      <max value="1"/>
875      <type>
        <code value="HumanName"/>
      </type>
      <isModifier value="false"/>
    </definition>
880  </extensionDefn>
  ...
```

3.78.4.2.2.3 Resource Bundling

885 Please see ITI TF-2x: Appendix Z.1 for details on the IHE guidelines for implementing FHIR bundles.

3.78.4.2.2.4 Incremental Response Processing - Paging of Resource Bundle

The Patient Demographics Supplier shall represent these incremental responses as specified FHIR Paging <http://hl7.org/fhir/DSTU2/http.html#paging>

3.78.4.2.2.5 Quality of Match

890 The Patient Demographics Supplier may convey the quality of each match based on strength of the particular result to the supplied query parameters. The mechanism for determining the confidence of match is considered a product specific feature, and is not specified in this transaction.

895 If the Patient Demographics Supplier wishes to convey the quality of match, it shall represent the confidence of a particular match within the bundle as a `score` attribute. See FHIR Relevance section <http://hl7.org/fhir/DSTU2/search.html#score>

3.78.4.2.3 Expected Actions

900 The constraints specified in Section 3.78.4.2.2 represent the minimum set of demographics information that must be implemented by a Patient Demographics Supplier. This does not prevent the Patient Demographics Supplier from sending additional FHIR attributes in a response; such as extensions, text, etc. The Patient Demographics Consumer shall ignore additional attributes and extensions if not understood.

The consumer shall process the response in some manner specific to its application function (for example: displaying on a user interface). This application behavior is not specified by IHE.

905 3.78.4.2.5 Conformance Resource

Patient Demographics Suppliers implementing [ITI-78] should provide a Conformance Resource as described in ITI TF-2x: Appendix Z.4 indicating the query operation for the Patient Resource has been implemented and shall include all query parameters implemented for the Patient Resource.

910 3.78.4.3 Retrieve Patient Resource message

This message represents an HTTP GET from the Patient Demographics Consumer to the Patient Demographics Supplier and provides a mechanism for retrieving a single Patient Resource with a known resource identifier.

3.78.4.3.1 Trigger Events

915 When the Patient Demographics Consumer possesses a Patient Resource's identifier (either through query, database lookup, or other mechanism) for which it requires additional or new information, it issues a Retrieve Patient Resource operation.

3.78.4.3.2 Message Semantics

920 The Retrieve Patient Resource is conducted by executing an HTTP GET against the Patient Demographics Supplier’s Patient Resource URL, providing the resource id of the patient being retrieved. The target is formatted as:

```
GET [base]/Patient/[resourceId]
```

The Patient Demographics Supplier shall respond to this query by sending a single Patient Resource instance. The specification for [base] is identified in ITI TF-2c:3.78.4.1.2.

925 The resource identifier included in the request always represents the unique identifier for the Resource within the scope of the URL. For example, while <http://example1.org/ihe/Patient/1> <http://example2.com/ihe/Patient/1> both contain the same [resourceId], they reference two different resource instances.

930 Note: The use of "http" or "https" in URL does not override requirements to use TLS for security purposes.

3.78.4.3.3 Expected Actions

935 The Patient Demographics Supplier shall retrieve the demographic record indicated by the Resource identifier on the HTTP GET supplied by the Patient Demographics Consumer. The Patient Demographics Supplier shall respond to the retrieve request as described by the following cases:

Case 1: The Patient Demographics Supplier finds in its information source the patient demographics record matching the `resourceId` sent in the HTTP request.

HTTP 200 (OK) is returned as the HTTP status code.

A Patient Resource is returned representing the result.

940 **Case 2:** The Patient Demographics Supplier fails to find in its information source the patient demographics record matching the `resourceId` sent in the HTTP request.

HTTP 404 (Not Found) is returned as the HTTP status code

An `OperationOutcome` Resource is returned indicating that the Patient Resource could not be found:

945

Attribute	Value
severity	error
type	{ http://hl7.org/fhir/vs/issue-type }not-found

950 The Patient Demographics Supplier may return other HTTP status codes to represent specific error conditions. When HTTP error status codes are returned by the Patient Demographics Supplier, they shall conform to the HTTP standard RFC 2616. Their use is not further constrained or specified by this transaction.

3.78.4.4 Retrieve Patient Resource Response message

The Patient Demographics Supplier’s response to a successful Retrieve Patient Resource message shall be an **HTTP 200** (OK) Status code with a FHIR Patient Resource, or an appropriate error code as defined in Section 3.78.4.2.2.1.

955 **3.78.4.4.1 Trigger Events**

The Patient Demographics Supplier found patient demographic record matching the Resource identifier specified by the Patient Demographics Consumer.

3.78.4.4.2 Message Semantics

960 The Retrieve Patient Resource response is sent from the Patient Demographics Supplier to the Patient Demographics Consumer as a single Patient Resource. See <http://hl7.org/fhir/DSTU2/patient.html> for details on this resource.

See ITI TF-2x: Appendix Z.6 for more details on response format handling. See ITI TF-2x: Appendix Z.7 for handling guidance for Access Denied.

965 If the Patient Demographics Supplier is unable to produce a response in the requested format, it shall respond with an **HTTP 400** error indicating that it was unable to fulfill the request. The Patient Demographics Supplier may be capable of servicing requests for response formats not listed, but shall, at minimum, be capable of producing XML and JSON encodings.

3.78.4.4.2.1 Patient Resource Definition in the Context of Retrieve Patient Resource Response

970 The Patient Resource definition in the context of a retrieve operation is identical to the constraints placed on the Patient Resource for a search (see Section 3.78.4.2.2.1)

For the complete FHIR definition of this Resource, see <http://hl7.org/fhir/DSTU2/patient.html>.

3.78.5 Security Considerations

See the general Security Consideration in ITI TF-1:38.5

975 **3.78.5.1 Security Audit Considerations**

The Security audit criteria are similar to those for the Patient Demographics Query [ITI-21] as this transaction discloses the same type of demographic information. The Mobile Patient Demographics Query is a Query Information event as defined in Table 3.20.6-1 (see ITI TF-2a:3.20.6). The following differences with [ITI-21]:

- 980
- EventTypeCode = EV(“ITI-78”, “IHE Transactions”, “Mobile Patient Demographics Query”)
 - Query Parameters (AuditMessage/ParticipantObjectIdentification)
 - ParticipantObjectIdTypeCode = EV(“ITI-78”, “IHE Transactions”, “Mobile Patient Demographics Query”)

- 985
- ParticipantObjectQuery = Requested URL including query parameters
 - ParticipantObjectDetail = HTTP Request Headers contained in the query (e.g., Accept header)

Appendices

Rename appendix M as follows in the Volume 2x Appendices

990 **Appendix M Using Patient Demographics Query in a Multi-Domain Environment**

Appendix M Patient Demographics Query Implementation Guidance

Add the following section to the end of Volume 2x Appendix M:

M.4 Data Elements Patient Demographics Query Profiles

995 This section describes the data elements that are used in IHE profiles designed for the querying of patient demographics (Patient Demographics Query Profiles) including PDQ, PDQv3, and PDQm.

1000 While the semantic representation of the data elements differs across the transaction in the PDQ Profiles, the common set of elements and query parameters can be described using abstract terminology. This section explains the data elements and query parameters used in PDQ Profiles from an abstract definition standpoint, and then it provides a map between the three profiles' implementation specific concept.

M.4.1 Patient Demographics Query Data Fields

1005 Table M.4.1-1 outlines the abstract demographics fields which are common to all Patient Demographics Query Profiles.

Table M.4.1-1: Patient Demographics Data Elements (abstract)

Field	Purpose
Identifier List	Provides one or more identifiers that can be used to uniquely identify the patient within a medical system.
Name(s)	Identifies the patient's preferred, legal, or alias names.
Date / Time of Birth	Identifies the date on which the patient was born.
Gender	Identifies the patient's gender used for administrative purposes.
Address(es)	Identifies the patient's associated addresses (home, work, etc.)
Telecommunications Address(es)	Identifies the patient's phone number, fax number, email addresses and other means of telecommunicating with the patient.
Language(s) of communication	Identifies languages which can be used when communicating with the patient.
Marital Status	Identifies the patient's marital status at time of last update (married, divorced, etc.)

Field	Purpose
Non-Medical Identifiers	Identifies additional identifiers associated with the patient which are not used for medical purposes (ex: driver's license, social insurance number, etc.)
Death Date/Time	Identifies the time at which the patient died.
Mother's Maiden Name	Identifies the name of the mother which is helpful in making a match.
Patient Birth Order	Distinguishes among multiples within a multiple birth (twins, triplets, etc.).

1010 Table M.4.1-2 provides a mapping between these abstract data elements and their transaction specific fields.

Table M.4.1-2: Patient Demographics Data Elements (concrete)

Abstract Field	PDQ	PDQ HL7v3	PDQm
Identifier List	PID.3 and PID.18	id	identifier
Name(s)	PID.5 and PID.9	name	name
Date / Time of Birth	PID.7	birthTime	birthdate
Gender	PID.8	administrativeGenderCode	gender
Address(es)	PID.11	addr	address
Telecommunications Address(es)	PID.13 and PID.14	telecom	telecom
Language(s) of communication	PID.15	languageCommunication	communication.language
Marital Status	PID.16	maritalStatusCode	maritalStatus
Non-Medical Identifiers	PID.19 and PID.20	asOtherIds	identifier
Death Date/Time	PID.29	deceasedTime	deceasedDateTime
Mother's Maiden Name	PID.6	personalRelationship.name	See ITI TF-2c: 3.78.4.2.2.2
Patient Birth Order	PID.25	multipleBirthOrderNumber	multipleBirthInteger

M.4.2 Patient Demographics Query Parameters

1015 Table M.4.2-1 outlines the demographics query parameters which are common to all Patient Demographics Query Profiles.

Table M.4.2-1: Patient Demographics Query Parameters (abstract)

Field	Purpose
Identifier List	Filters the result set to a list of patients whose identifiers match the provided identifiers.
Name	Filters the result set to a list of patients whose name (legal, maiden, alias, etc.) matches the provided value. The mechanisms for match are not specified but can include: exact match, pattern match, phonetic match, variant match, etc.
Date / Time of Birth	Filters the result set to patients whose date/time of birth match the provided value.
Gender	Filters the result set to patients whose administrative gender matches the provided value.
Address	Filters the result set to patients whose address (home, business, etc.) matches the provided value.
Domains to be Returned	Filters the result set to include only identifiers which have been assigned by the specified domains.
Mother's Maiden Name	Filters the result set to include only those patients which whose mother's maiden name matches the specified name.
Patient Telecommunications Addresses	Filters the result set to include only those which have the specified telecommunications addresses.

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Table M.4.2-2 provides a mapping between these abstract query parameters and their transaction specific implementation.

Table M.4.2-2: Patient Demographics Query Parameters (concrete)

Abstract Parameter	PDQ	PDQ HL7v3	PDQm
Identifier List	@PID.3 and @PID.18	livingSubjectId	identifier
Name	@PID.5	livingSubjectName	given and family
Date / Time of Birth	@PID.7	livingSubjectBirthTime	birthdate
Gender	@PID.8	livingSubjectAdministrativeGender	gender
Address	@PID.11	patientAddress	address
Domains to be Returned	QPD-8	otherIDsScopingOrganization	See ITI TF-2c: 3.78.4.1.2.4
Mother's Maiden Name	@PID.6	mothersMaidenName	mothersMaidenName.given and mothersMaidenName.family
Patient Telecommunications Addresses	@PID.13	patientTelecom	telecom

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