



# CommonWell Health Alliance Use Case Specification

*Version 2.0*

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**How to use this document:**

This Use Case Specification can be used by CommonWell members to identify provider workflows which are directly and indirectly impacted by the introduction of CommonWell services. When possible, alternate workflows are provided to account for variance. The appendix of the specification provides guidance for members who deploy CommonWell only to the ambulatory care space.

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## 1 Person Enrollment

*As an Edge System user, I can enroll a Person into CommonWell.*

### 1.1 Overview

The workflow by which an individual person participates in the CommonWell system is distinguished from any Patient Records that may already exist for this person in any particular Edge System. Ideally, a fundamental requirement for enrollment is the presentation and validation of an authoritative identifier (e.g., a state-issued ID with a photograph). However, we decided that a person can enroll without a strong identifier to drive an increase in overall participation rates.

The enrollment of a Person to CommonWell is a global attribute of the person. Once completed, all participating Organizations have access to this information by way of the Edge System Registry.

A prerequisite to enrolling Persons is that the Organization has registered itself as a participating Organization with the CommonWell network.

A user at a participating Organization must be provided the capability to enroll a Person in CommonWell. . Organizational enrollment of a Person in CommonWell allows access to Patient Records from other participant Organizations at which the Patient has been registered. Enrollment will expose an authoritative ID (if available) for use in defining links to other Patient Records accessible via CommonWell.

### 1.2 Narrative

#### 1.3 Scenario 1 – As an Edge System user, I can enroll a Person into CommonWell.

##### 1.3.1 Pre-conditions

The patient presents him/herself at the physical location of a participating Organization. See the Patient Search use case.

##### 1.3.2 Scenario

Frank Nolan is a patient of Dr. Jeffrey Geiger, a general practitioner working in the Chicago area. During an encounter at Dr. Geiger's office, an authorized Edge System user in Dr. Geiger's office gives Frank a high-level overview of CommonWell and explains what it means to be enrolled.

Frank agrees to enrollment and provides his driver's license, which is an authoritative ID, to the Edge System user for scanning. Information related to enrollment and details from Frank's authoritative ID are sent to CommonWell.

##### 1.3.3 Post-conditions

Frank is enrolled as a new Person in CommonWell.

The authoritative ID is consumable in CommonWell.

#### 1.3.4 Alternate Flows

The Organization would like to enroll a population of its patients into CommonWell via an attended patient kiosk. The enrollment does not happen on the healthcare organization's premises. For instance, the patients can present an authoritative ID to the kiosk that can enroll them at the local mall. Messages are still submitted one at a time to CommonWell. Per Policy Sub Group, a human will need to validate the ID at the kiosk.

#### 1.3.5 Exception Cases

If the Edge System enrolls a Person who is already enrolled, CommonWell gracefully handles the duplicate enrollment. This is transparent to the Edge System user. Lab systems are not allowed to enroll patients during the pilot.

#### Negative Test

Internal error: Respond with "500" status code for internal error; Forbidden error: Respond with "403" status code for forbidden error; Conflict error: Respond with "409" status code for conflict error; Unauthorized Access: Respond with "401" status code; Bad Request: Respond with "400" status code.

#### 1.3.6 Expected Actions

#### 1.3.7 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

## 2 Person Unenrollment

*As an Edge System user, I can unenroll a Person.*

### 2.1 Overview

A user at a participating Organization must be provided the capability to unenroll a Person from CommonWell. During unenrollment, any LOLA 2 or higher links (to the Person) are removed and the Person Record is disabled.

Some information about that unenrolled Person is retained by CommonWell. Data retained after unenrolling must be in a format that is not accessible by Edge System Systems until such a time that the Person re-enrolls from a participating Organization.

After unenrollment, CommonWell can still return the Person Record as part of a LOLA 1 Patient Match (using patient-level demographics information).

### 2.2 Narrative

#### 2.3 Scenario 1 – As an Edge System user, I can unenroll a Person from CommonWell

##### 2.3.1 Pre-conditions

The person has enrolled in CommonWell.

The person presents him/herself at a participating Organization.

##### 2.3.2 Scenario

Barbara Hyland initially agreed to enroll in CommonWell at a kiosk in the mall near where she lives in Cincinnati, OH. When she goes to her primary care provider (PCP) the first time after she enrolls, Barbara tells one of the office staff that she is concerned about her privacy and wishes to opt out of sharing of information in the network.

The authorized Edge System user verifies Barbara's identity. The user unenrolls Barbara.

##### 2.3.3 Post-conditions

Any LOLA 2 or higher links (to the Person) are removed.

The Person Record is disabled.

The Person consent is revoked.

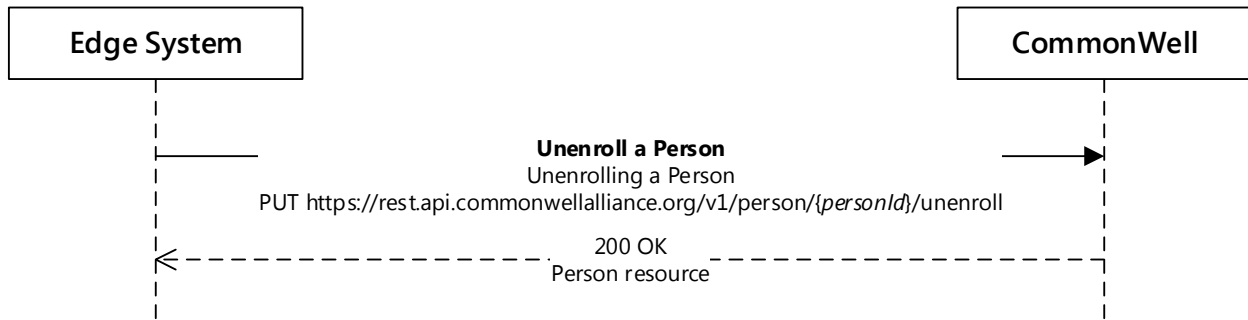
CommonWell retains some information about that Person (hashed/encrypted strong-id and core demographics).

##### 2.3.4 Alternate Flows

The patient was not enrolled as a Person. CommonWell returns that the Person is not found.

##### 2.3.5 Exception Cases

### 2.3.6 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

Unenrolling a Person from CommonWell will remove all links to associated Patient resources. The Person may still appear in searches, but with its *enrolled* status set to *False*.

## 3 Person Management

*As an Edge System user, I can manage Person information (search and update).*

### 3.1 Overview

Enables an authorized user within an Organization to search by key demographic attributes or strong ID. The key demographics are defined as the required demographics in the enrollment use case.

### 3.2 Narrative

An Edge System can search for an existing Person based on demographic information and optionally a strong identifier. This is typically the first step in a Person Enrollment workflow, wherein the Edge System finds out whether or not an individual has already enrolled in CommonWell. The key value of a strong identifier is stored in CommonWell as a hashed value for use in search algorithms and never returned in search or get operations.

### 3.3 Scenario 1 – As an Edge System user, I can search for a Person in CommonWell

If a provider doesn't have a valid patient relationship, there is no business reason for searching for an enrolled Person inside CommonWell. However, if a new person is present in front of the provider with a strong ID, the person represents a potential patient and searching is appropriate.

#### 3.3.1 Pre-conditions

The Organization is a member of CommonWell.

The person has a strong id available for the authorized user to access.

#### 3.3.2 Scenario

Frank Nolan requests the authorized Edge System user in Dr. Geiger's office to confirm his enrollment status with CommonWell. The authorized Edge System verifies the identity of the patient using the strong ID. The user searches for Frank Nolan.

#### 3.3.3 Post-conditions

CommonWell returns 0 or more Person resources.

If any Person resources are returned, each resource contains:

- Person-level demographics
- The Person CommonWell resource ID
- Date of enrollment and Organization name
- Date of last change in enrollment status

### 3.3.4 Alternate Flows

No strong id is available for the person.

Returns from queries without strong ID will be limited (by a security constraint) to patients who are registered to the local Organization.

Note that the use of DL card reader and scanning devices is out of scope for pilot.

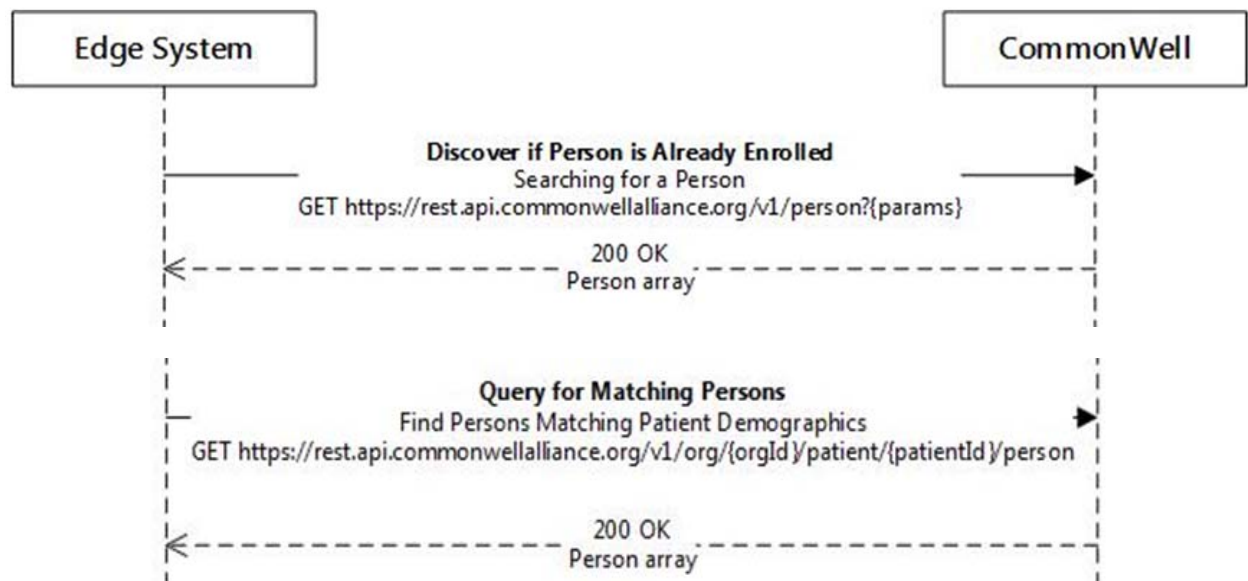
### 3.3.5 Exception Cases

### 3.3.6 Expected Actions

#### Negative

- Internal error: Respond with "500" status code for internal error.
- Forbidden error: Respond with "403" status code for forbidden error.
- Conflict error: Respond with "409" status code for conflict error.
- Unauthorized Access: Respond with "401" status code.
- Bad Request: Respond with "400" status code.
- Not Found: Respond with "404" status code.
- Presumed deleted: Respond with "410" status code.
- 410 (Gone) when Person has been logically deleted.
- 412 (Precondition Failed) if update is happening and eTag value of Person doesn't match with server (basically, they're working with a stale copy of the Person data).

### 3.3.7 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

## 3.4 Scenario 2 – As an Edge System user, I can update a Person resource

### 3.4.1 Pre-conditions

Person exists inside CommonWell.

The Edge System has the Person resource ID, for instance, using the PERSON Search use case.

### 3.4.2 Scenario

Juan Valdez is already registered with an authoritative identifier from California. Juan moves from California to Colorado and gets a new driver's license. Juan then presents at a CommonWell-enabled Organization in Colorado with a new address and a new driver's license.

The authorized Edge System user verifies the Person identity.

The authorized Edge System user updates Person-level demographic detail and strong ID using the Person CommonWell ID.

### 3.4.3 Post-conditions

Person-level detail is updated with new authoritative ID and new demographic address.

### 3.4.4 Alternate Flows

Person is not updated.

### 3.4.5 Exception Cases

Without minimum required demographics, CommonWell returns an error.

#### **Negative Test**

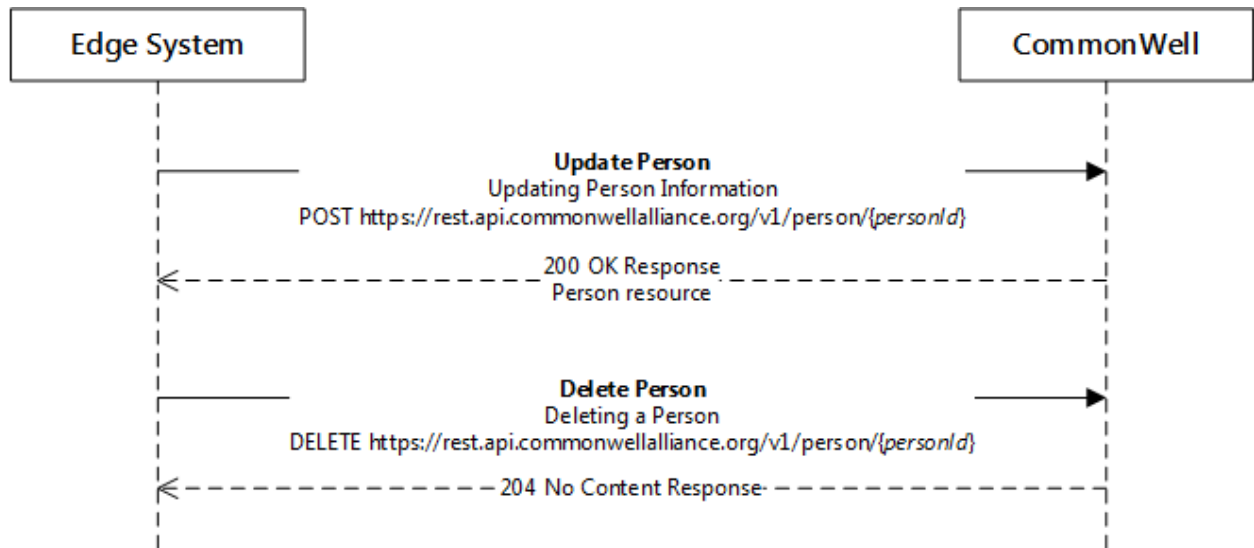
- Internal error: Respond with "500" status code for internal error.
- Forbidden error: Respond with "403" status code for forbidden error.
- Conflict error: Respond with "409" status code for conflict error.
- Unauthorized Access: Respond with "401" status code.
- Bad Request: Respond with "400" status code.

### 3.4.6 Expected Actions

#### **Negative**

- Not Found: Respond with "404" status code.
- Presumed Deleted: Respond with "410" status code.

### 3.4.7 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.



## 4 Patient Registration

*As an Edge System Organization, I can register and manage a Patient with CommonWell.*

### 4.1 Overview

CommonWell enables an authorized user within an Organization to create, update or merge a Patient that has a unique, enterprise ID assigned by their Organization. Also, CommonWell enables an Edge System organization to add, edit or remove encounter dates for that Patient.

By creating an up-to-date copy of Patient enterprise IDs, demographics and encounter dates in CommonWell, Edge System organizations will benefit from a more accurate Patient Matching service that provides greater context about the relevancy of each Patient Record match.

As a platform for record matching across healthcare organizations, CommonWell supports acting as a clearinghouse of patient demographic and identifier information. Specifically, CommonWell acts as a service that stores encounter context for specific patients within an Edge System organization.

CommonWell exposes a publicly available service that can process patient identity feeds with patient encounter information from identity source organizations. As an outcome of this feature, CommonWell builds an exhaustive and up-to-date data store of patient encounter metadata for each of the Edge System organizations that have been registered on the CommonWell platform. The purpose of this use case is to let an Organization send to CommonWell information about its patients.

CommonWell stores the information that contains patient encounter information. Sending registration information is subject to local Edge System policies, but it is not affected by enrollment and consent values. Business Associate Agreements enable the push of encounter date information into CommonWell.

### 4.2 Narrative

#### 4.3 Scenario 1 – As an Edge System user, I can register a new Patient (no Visit information)

##### 4.3.1 Pre-conditions

Assumes the Patient does not exist in the local Organization system.

Assumes the Patient does not exist in CommonWell.

Assumes the Edge System registration system can provide the specific minimum data set to CommonWell. The minimum data set is listed below:

- Patient Demographics
  - First Name
  - Last Name
  - Date of Birth

- Gender ← **Optional for Registration**
- Home Zip Code ← **Optional for Registration**
- Local Patient Identifier ID
- Assigning Authority (e.g., Organization A)

#### 4.3.2 Scenario

Patient Sean Thomas comes to Dr. Jeffrey Geiger, his primary care provider (PCP), for a first Visit. At the front desk, the authorized Edge System user looks up Sean in the local registration system. Sean is not found, so the authorized Edge System user proceeds to create the Patient. The registration system and/or Edge System send(s) the Patient information to CommonWell. The CommonWell Patient Matching service processes the information and creates a record for this patient. This is happening at each new CommonWell-enabled Organization Sean visits for patient care.

#### 4.3.3 Post-conditions

The Patient exists in the Organization registration system and/or Edge System.  
The Patient Record exists in CommonWell. The Person does not exist in CommonWell as that Person Enrollment has not occurred yet.

#### 4.3.4 Alternate Flows

#### 4.3.5 Exception Cases

The CommonWell service is busy, unavailable, or under maintenance.  
The Edge System messaging system is busy, unavailable, or under maintenance.  
The message is missing required demographic information (e.g., First name, last name, date of birth, enterprise ID, Assigning Authority).  
Samples of known errors are available inside the technical spec.

### 4.4 Scenario 2 – As an Edge System user, I can register a new Patient (with Visit information)

#### 4.4.1 Pre-conditions

Assumes the Patient does not exist in the local Organization system.  
Assumes the Patient does not exist in CommonWell.  
Assumes the Edge System registration system can provide the specific minimum data set to CommonWell. See demographic information below:

- Patient Demographics
  - First Name
  - Last Name
  - Date of Birth
  - Gender ← **Optional for Registration**
  - Home Zip Code ← **Optional for Registration**
- Local Patient Identifier ID
- Assigning Authority (e.g., Organization A)

Assumes the Edge System registration system can provide the Visit required data set to CommonWell:

- Start Date: The date the patient started to receive care.
- Organization: The location where the service was provided.

#### 4.4.2 Scenario

Patient Anya Stark decides to see a podiatrist that her PCP recommended for lingering foot pain. At the front desk, the authorized Edge System user looks up Anya in the registration system. Anya is not found in the local system. The authorized Edge System user proceeds to create the Patient and her Visit. This activity is happening at each new CommonWell-enabled Organization Anya visits for patient care.

#### 4.4.3 Post-conditions

The Patient exists in the Organization registration system and/or Edge System.  
 The Patient Record exists in CommonWell.

The Person does not exist in CommonWell as that Person Enrollment has not occurred yet.

The Patient has an encounter date inside CommonWell.

#### 4.4.4 Alternate Flows

#### 4.4.5 Exception Cases

The CommonWell service is busy, unavailable, or under maintenance.

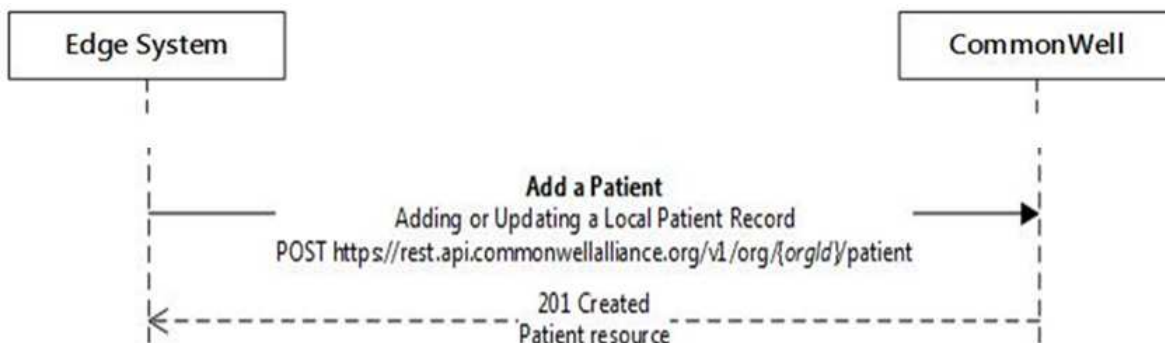
The Edge System messaging system is busy, unavailable, or under maintenance.

The message is missing required demographic information.

Samples of known errors are available inside the technical spec.

The sending system did not provide the minimum set of Visit information. The receiving system sends a negative Acknowledgement.

#### 4.4.6 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

## 4.5 Scenario 3 – As an Edge System user, I can merge two Patient Records that exist in the Organization and CommonWell

Misspelling of key demographic details and name change activities (such as marriage) drive the need to merge patients over time. In this scenario, the merge message results in a survivor and non-survivor pair of patient records. Merge transactions are generated exclusively via HL7 ADT interfaces.

### Assumptions

- CommonWell will not be responsible for merging demographic/encounter details. This decision is controlled by local EHR. Survivor demographics will be updated with the details of the A40 from PID3 and may be subsequently updated with an A08.
- Edge System cannot reuse the local patient ID of the non-surviving patient.
- Downgraded links will carry forward from non-surviving patient to surviving patient unless surviving patient has an active link to the remote patient.

#### 4.5.1 Pre-conditions

Tyrel Lannister is Patient A in the local Organization and CommonWell.

Tyrell Lannister is Patient B in the local Organization and CommonWell.

#### 4.5.2 Scenario

Patient Tyrel Lannister comes to Peachtree Hospital for a spider bite that occurred on a weekend. At the front desk, the authorized Edge System user looks up Tyrel in the registration system. Tyrel is found in the local Edge System but his first name is incorrectly spelled with two “l” letters. The authorized Edge System user initiates a patient merge activity within the registration system and selects Patient A. Now the demographic data for Tyrell Lannister is replaced with the name Tyrel Lannister. The merge request updates data in the local Edge System and the merge request is propagated to CommonWell.

#### 4.5.3 Post-conditions

Tyrel Lannister is Patient A in the local organization and CommonWell.

Patient B no longer exists in the local organization and CommonWell.

Any network link request that previously returned the non-surviving Patient will no longer return the Patient because the non-surviving Patient ID is no longer valid.

#### 4.5.4 Alternate Flows

Multiple local Patients linked to a single CommonWell Person. The two Patients intended for merge already contain Person links, and they point to the same CommonWell Person Record. Person index links are updated (carried-forward) to surviving patient ID (all found from MRG-1 segment).

Multiple local Patients linked to multiple CommonWell Persons. The two Patients intended for merge already contain Person links, and they point to different CommonWell Person Records. Person index link does not get carried forward to surviving patient ID.

Two local Patients merged; survivor is not linked to a CommonWell Person. Of the two Patients being merged, the Patient intended to survive does not have a Patient link relationship to a CommonWell Person Record, but the non-surviving Patient Record does have a link to a CommonWell Person Record. Person index links are updated (carried-forward) to surviving patient ID (all found from MRG-1 segment).

#### 4.5.5 Exception Cases

The merge process fails inside CommonWell due to a missing required data field, or an incorrect data type is passed in. A negative acknowledgement is returned to the sender (verified).

One of the identifiers is not registered.

## 5 Historical Data Backload

*As an Edge System vendor, I can backload historical Patient and Visit information into CommonWell.*

### 5.1 Overview

Batch loading a pool of data from prior Visits into CommonWell will seed the patient population for an Organization in CommonWell. As such, it will “kick-start” the matching of Patients and accelerate the time-to-value of the service. CommonWell provides two primary interfaces for managing patient identify data: (1) HL7 V2.x ADT and (2) a REST-based service. For each type of interface, CommonWell will provide a dedicated endpoint for this type of data feed.

### 5.2 Narrative

#### 5.3 Scenario 1 – As an Edge System Organization, I can upload and register a batch of new Patient Records with Visit information.

##### 5.3.1 Pre-conditions

Organization has registered inside CommonWell.

The Organization has identified the population of Patients to upload to CommonWell based on policies.

##### 5.3.2 Scenario

Edge System vendor would like to backload their existing Patient Records data into CommonWell.

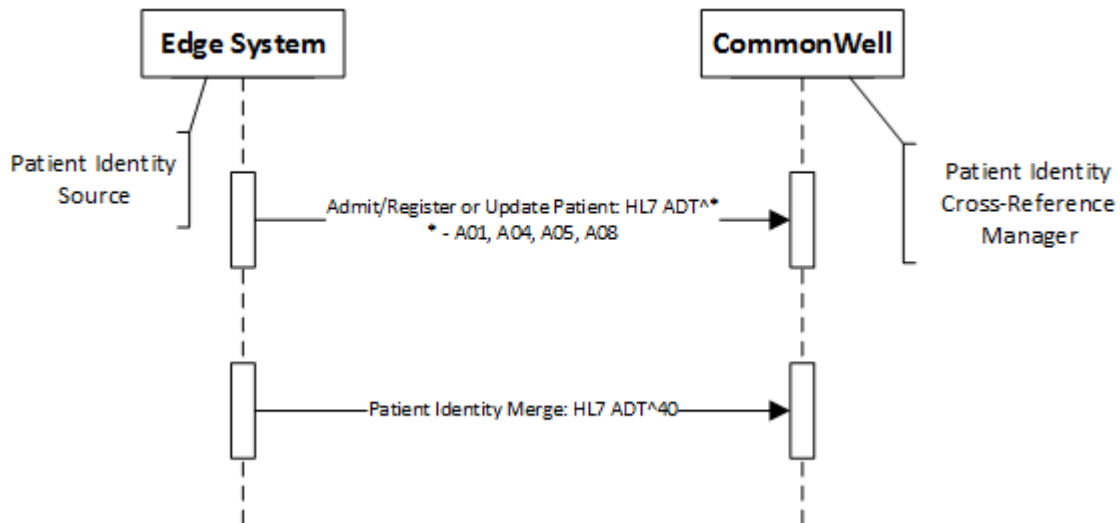
##### 5.3.3 Post condition

CommonWell accepts the backloaded data from the Organization and makes the data available in the network.

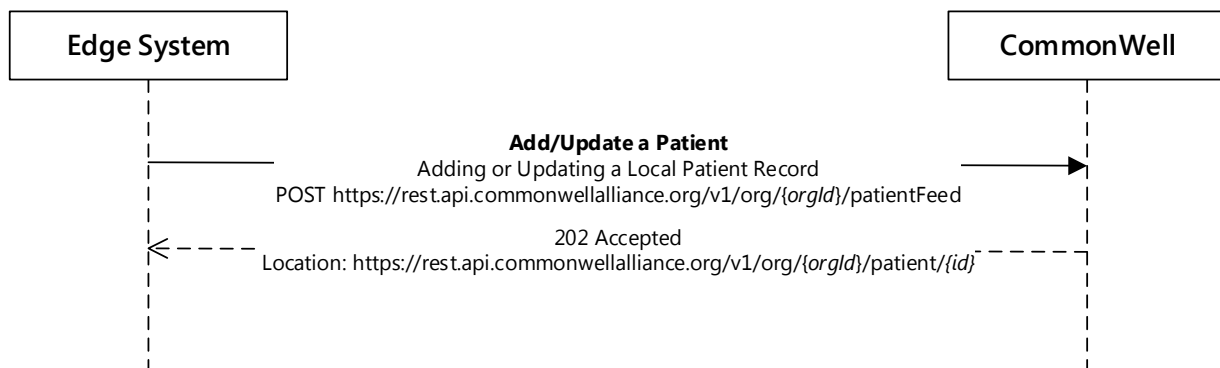
Patients are registered inside CommonWell.

### 5.3.4 Transactions

#### PIX-based Historical Feed



#### REST-based Historical Feed



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

## 6 Demographics Patient Update

### 6.1 Overview

The purpose of this use case is to let Organizations update existing Patient information in CommonWell. This information contains Patient demographics as well as encounter information.

### 6.2 Narrative

This is a separate workflow from updating a Person Record. There is a separate API for update of a Person resource via FHIR. This workflow is specific to the demographics associated with the Local Patient Record.

### 6.3 Scenario 1 – As an Edge System user, I can update Patient demographics for a registered Patient in CommonWell

#### 6.3.1 Pre-conditions

The Patient exists in the local organization system.  
The Patient is registered in CommonWell for the local Organization.

#### 6.3.2 Scenario

Patient Anya Stark comes to her PCP for a scheduled Visit. At the front desk, the authorized Edge System user looks up Anya in the registration system. Anya is found, so she proceeds to review the patient information. The authorized Edge System user updates her home address and phone number. The Edge System sends the demographics to CommonWell. The CommonWell Patient Identity Service processes the information and updates the Patient information for this Organization.

#### 6.3.3 Post-conditions

The Patient Record in CommonWell for this Organization is updated with new demographic data

#### 6.3.4 Alternate Flows

If the Patient does not exist in CommonWell (e.g., the registration message did not get processed), CommonWell would process it as a new registration. This scenario falls in the Patient registration use case from an infrastructure perspective.

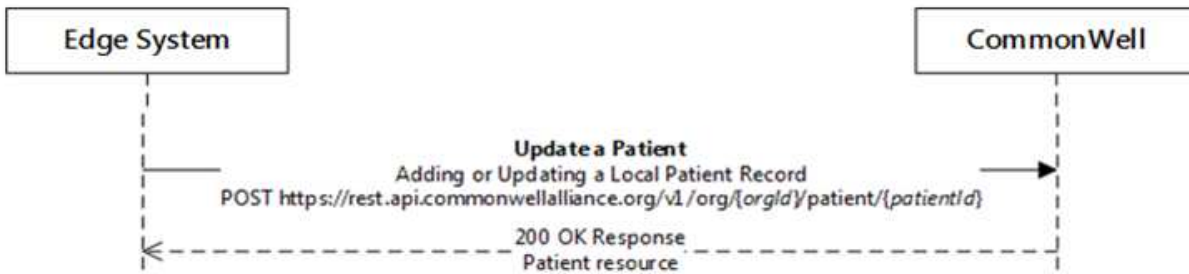
#### 6.3.5 Exception Cases

The Patient does not exist in CommonWell. The message is treated as a registration message and follows the registration use case.



### 6.3.6 Transactions

Use the same technology as the Patient Registration use case.



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

## 7 Level of Link Assurance (LOLA) Management

*As an Edge System Organization, I can manage the Level of Link Assurance in CommonWell.*

### 7.1 Overview

The concept of LOLA is to leverage the innate power of the human network to improve the matching of Patient Records across encounters and over time. When a person has been enrolled into the CommonWell network, that same person may benefit from the linkage of future encounters. The concept of upgrading and downgrading a Patient Link directly improves the value of the CommonWell network.

### 7.2 Narrative

LOLA refers to an integer value expressing CommonWell's level of confidence in a Network Link (the relationship between Patient Records across Organizational boundaries). These links will, in most cases, carry a LOLA level of 1, 2, or 3. A level 0 link is established only after a patient's explicit denial of the existence of a link between his or her Person and a given Patient entity.

**Level 0:** Identifies a false-positive match between a Local Patient Record and a Remote Patient Record. This level can only be established by user interaction, downgrading a higher LOLA (e.g., a registration clerk confirms with an individual that a presumptive LOLA 1 Network Link is NOT the same person. The clerk then initiates a command message from the Edge System to CommonWell to downgrade the Level 1 Network Link between the two Patient Records to a LOLA 0). Once a Network Link is demoted to LOLA 0, the Remote Patient Record referenced by that link will no longer appear in the Local Patient Record's list of Network Links in any Edge System.

**Level 1:** Established by CommonWell's probabilistic matching algorithm, this identifies a presumptive match between a Local Patient Record and a Remote Patient Record. Network Links with LOLA 1 cannot be used for document query and retrieval. Edge System users may either validate this as a match (promoting the Network Link to LOLA 2 or LOLA 3 with strong ID) or confirm this is a false positive (demoting the Network Link to LOLA 0).

**Level 2:** Identifies a network relationship between Patient Records that has been validated using demographic information. Validation MUST be confirmed by an authorized user of an Edge System (e.g., a registration clerk verifies with an individual that his or her street address in the Local Patient Record is the same as the one found in a Remote Patient Record. The clerk then initiates a command message from the Edge System to CommonWell to create the Level 2 link between the two Patient Records). This is a virtual, transitive link established from one Patient entity to another through a shared Person.

**Level 3:** Identifies a network relationship between Patient Records that has been validated using demographic information and an authoritative ID. A positive verification based on a person already

known to an Organization, in addition to validation of demographic information, can also achieve a level 3. This is a virtual, transitive link established from one Patient entity to another through a shared Person.

**Level 4 (not yet implemented):** Identifies a network relationship between Patient Records that have been validated using biometric data.

**Organization:** A healthcare system that interacts with the CommonWell services as a provider of Patient Identity information and as a consumer of the CommonWell Patient discovery and record location services. This term is used interchangeably with *Community*. An Organization's Edge System acts as a source of Patient Record data to CommonWell. An Organization's Responding Gateway maintains publicly available service endpoint(s) for query and retrieval of clinical data related to Patients maintained by the Organization. An Organization may represent a single healthcare facility or a Health Information Exchange (HIE) entity.

**Patient Link:** A Patient Link represents a relationship between a Person and a Patient Record. The existence of a Patient Link implies the acquisition of patient consent to establish the link. The level of confidence of this link is represented by its Level of Link Assurance (LOLA) value.

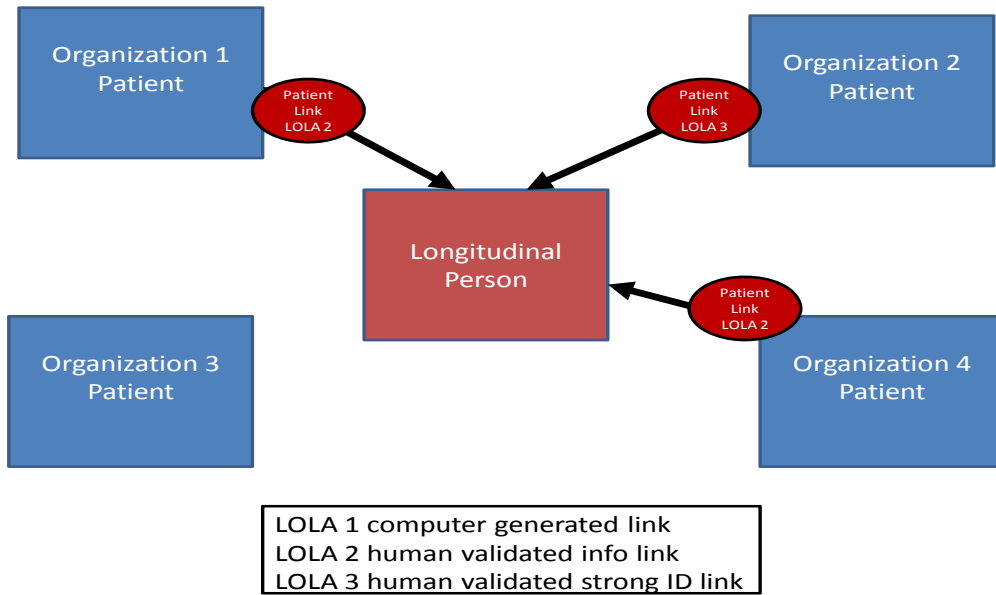
**Network Link:** A Network Link represents a transitive relationship between Patient Records that reference the same Person within CommonWell. The level of confidence of this link is represented by the Level of Link Assurance (LOLA) value.

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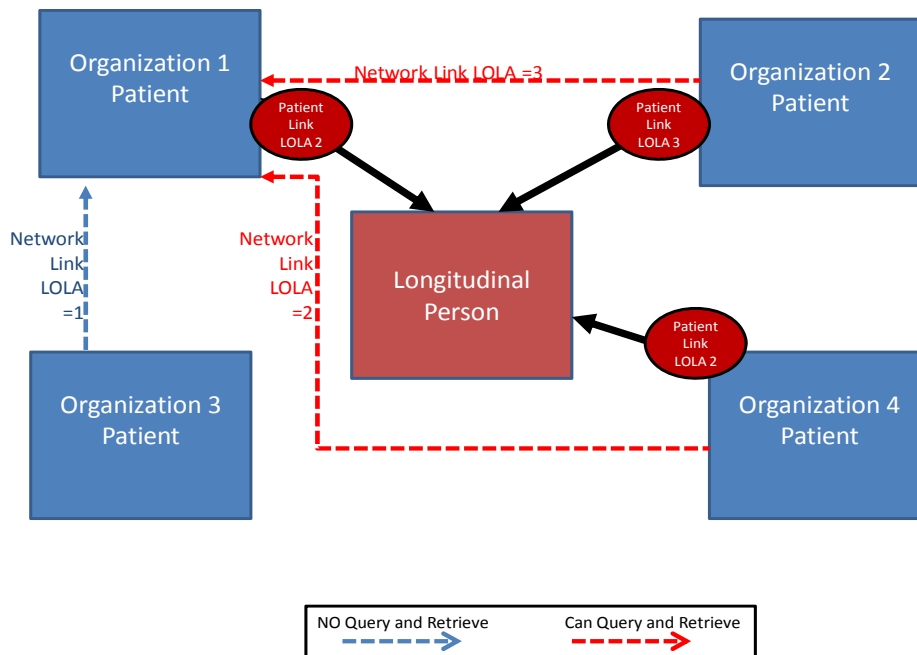
**Working Example:** Assume Organization 1 has a LOLA 2 Patient Link; Organization 2 has a LOLA 3 Patient Link; Organization 3 has no Patient Link; Organization 4 has a LOLA 2 Patient Link. Network Links are defined by these Patient Links. These next diagrams define the World View of each Organization.

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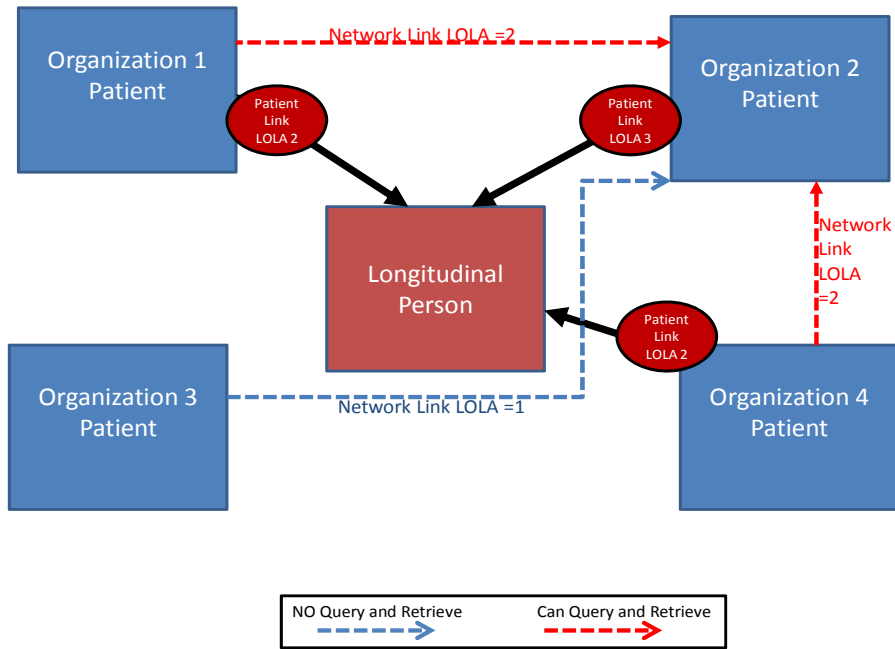
## Person to *Patient Link* LOLA Defines Future Patient to Patient *Network Links*



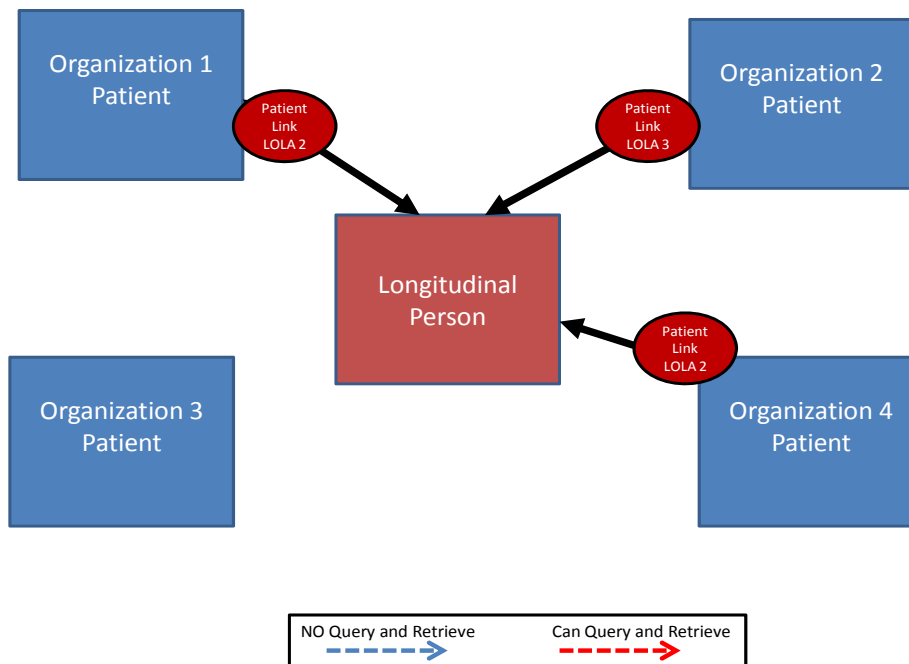
## World View from Organization 1



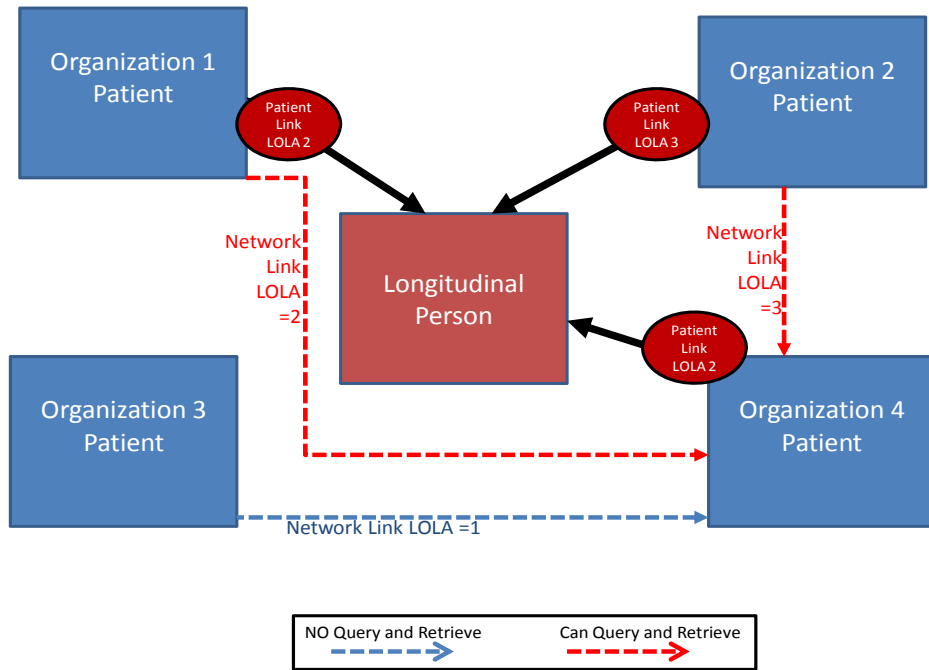
## World View from Organization 2



## World View from Organization 3



## World View from Organization 4



## 7.3 Scenario 1 – As an Edge System user, I can add a link (linking Patient to Person)

### 7.3.1 Pre-conditions

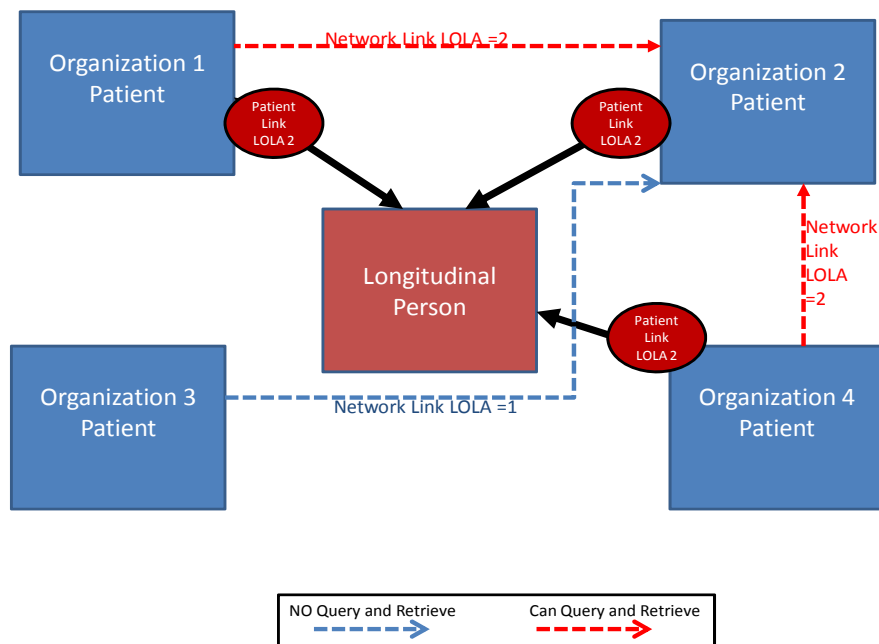
Organization 1, 2, 3 4 are members of CommonWell.

The Patient was enrolled in CommonWell in Organization 1 without a strong ID.

A Person resource exists in CommonWell.

The Patient exists in Organization 3, and Organization 3 sent a registration message to CommonWell.

### World View from Organization 2



### 7.3.2 Scenario

The user at Organization 2 searches CommonWell for a matching Person.

CommonWell returns the Network Link (LOLA 1) from Organization 3 that matches the Patient.

The Edge System authorized user at Organization 2 verifies the patient identity.

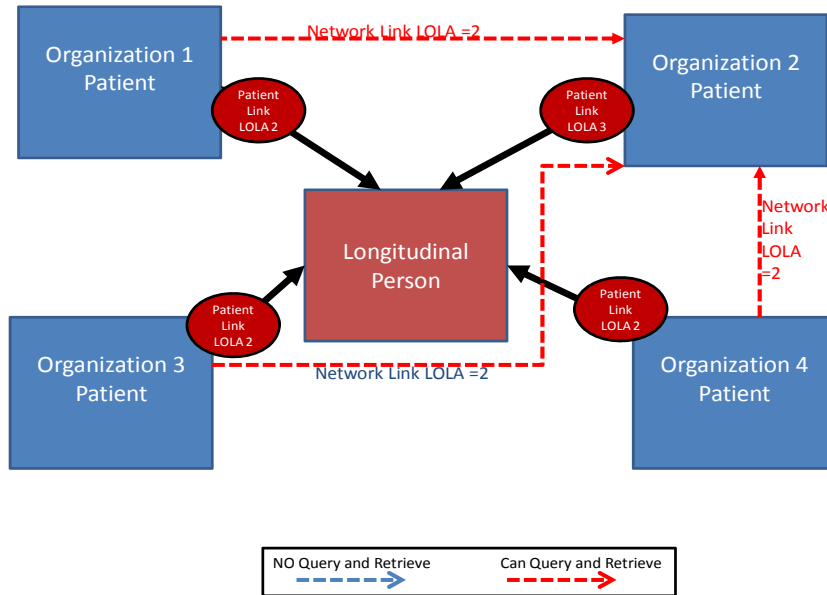
The Edge System authorized user issues a command to link the Organization 3 Patient to the Person returned by the Patient Identity Service.

### 7.3.3 Post-conditions

Patient for Organization 3 has a new LOLA 2 Patient Link to the Person Record.

The Network Link from Organization 3 to Organization 1 is upgraded from LOLA 1 to LOLA 2.

## Updated World View from Organization 2



### 7.3.4 Alternate Flows

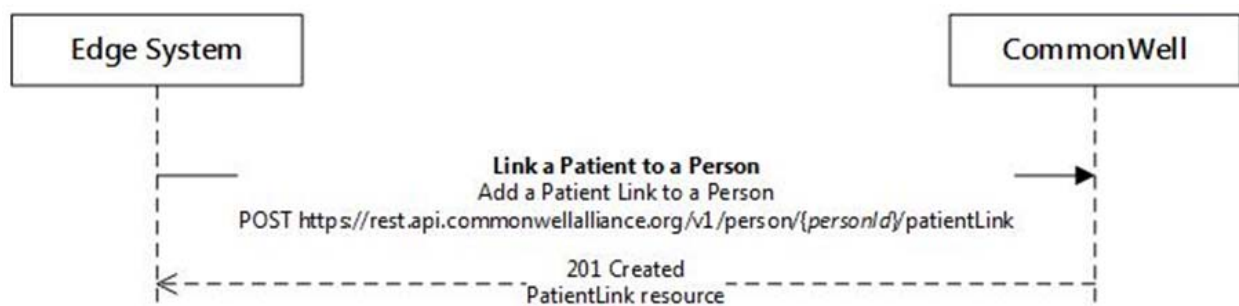
### 7.3.5 Exception Cases

Unauthorized access: CommonWell finds that the Edge System user is NOT authorized  
 Structural error:

- Incorrect formatting
- Missing required fields

System unavailable, Internal error, Conflict error in link request

### 7.3.6 Transactions:





## 7.4 Scenario 2 – As an Edge System user, I can upgrade a Patient Link.

If an Organization registers patients into the CommonWell network, then they must accept that other Organizations can upgrade their LOLA network and Patient Links without their input. (Mental health operations should be careful not to register their patients with CommonWell).

### 7.4.1 Pre-conditions

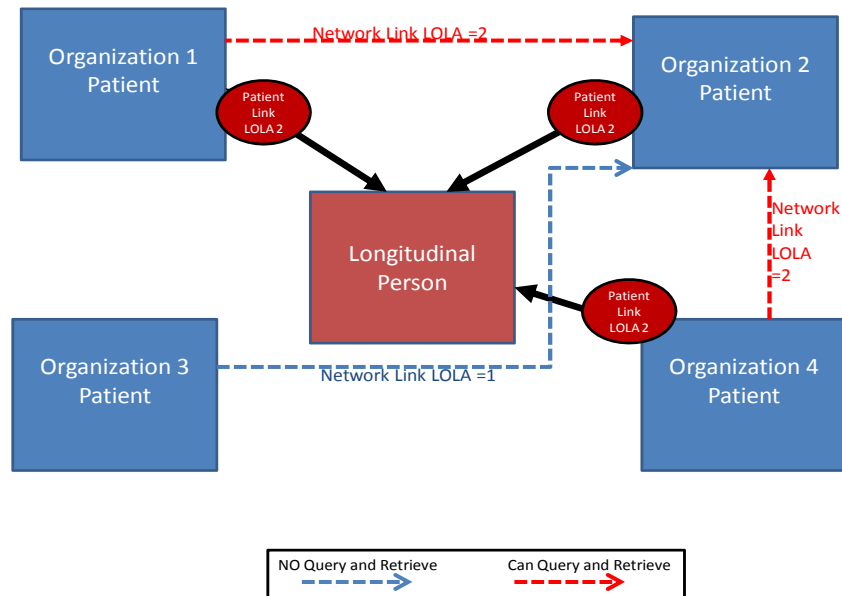
Organization 2 is a member of CommonWell.

Person is enrolled in CommonWell.

Patient visited Organization 2 without a strong ID and was registered.

Authorized user verified demographic and Visit information during prior Visit.

### World View from Organization 2



### 7.4.2 Scenario

Patient walks into Organization 2 again but with an authoritative ID.

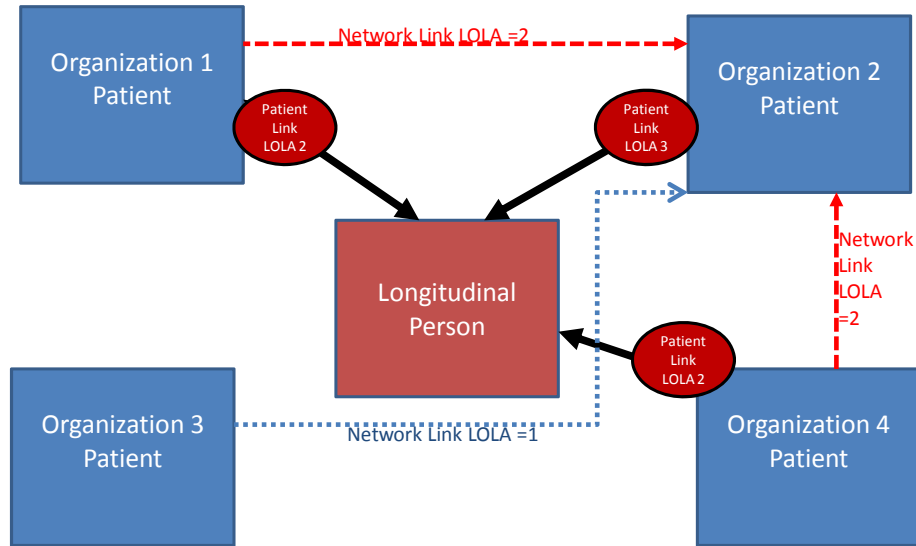
The user at Organization 2 searches CommonWell for a Patient Match using demographics data that the person provides.

The Organization 2 user verifies the Visit information (Organization & date) along with the authoritative picture ID and upgrades the Person to Patient Link from LOLA 2 to LOLA 3.

### 7.4.3 Post-conditions

The Patient Link between Person and Organization 2 is upgraded from LOLA 2 to LOLA 3.

## Update 2 World View from Organization 2

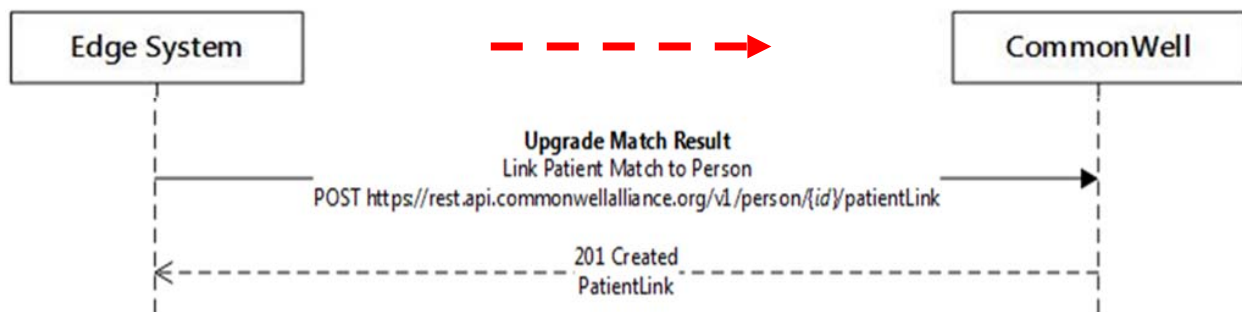


### 7.4.4 Alternate Flows

### 7.4.5 Exception Cases

Same as Scenario 1.

### 7.4.6 Transactions



## 7.5 Scenario 3 – As an Edge System user, I can downgrade a link (linking Person to Patient)

### 7.5.1 Pre-conditions

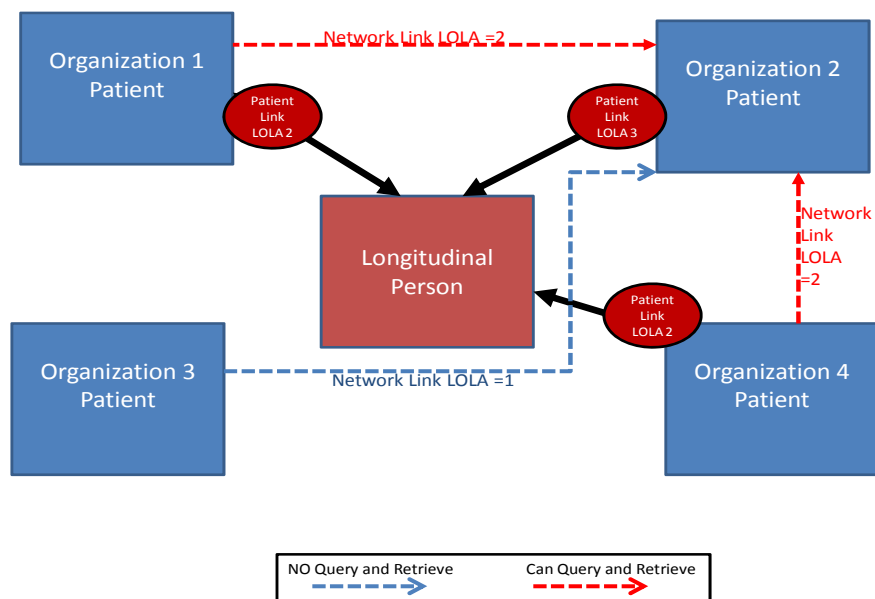
Person is enrolled inside CommonWell and registered at Organization 2.

Patient is registered at Organization 1.

Patient came to Organization 1 impersonating Person at prior encounter.

The user at Organization 2 linked (LOLA 3) Patient to Person after verifying the authoritative ID.

### World View from Organization 2



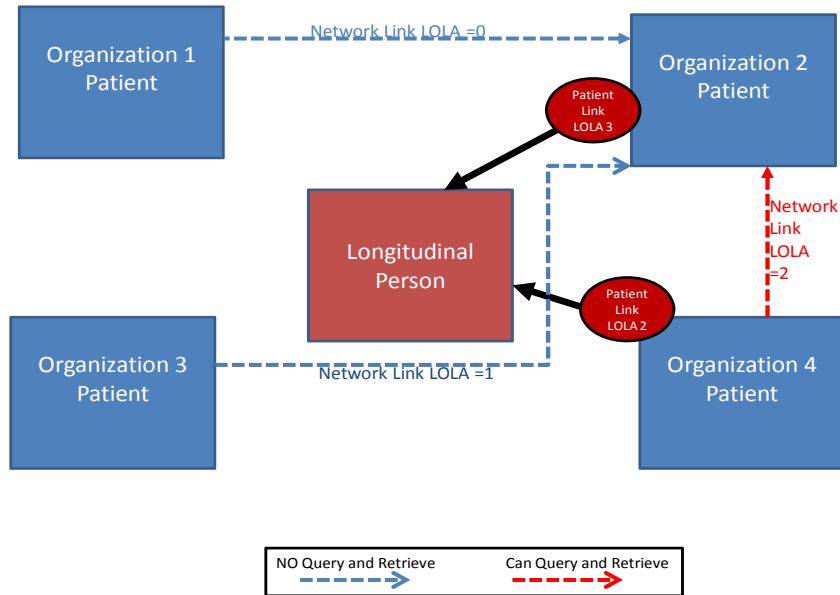
### 7.5.2 Scenario

The user at Organization 2 identifies the fraud from Organization 1 and downgrades the Patient Link from 2 to 0.

### 7.5.3 Post-conditions

The Network Link from Organization 1 to Organization 2 is downgraded from LOLA 2 to LOLA 0.

### Update 3 World View from Organization 2

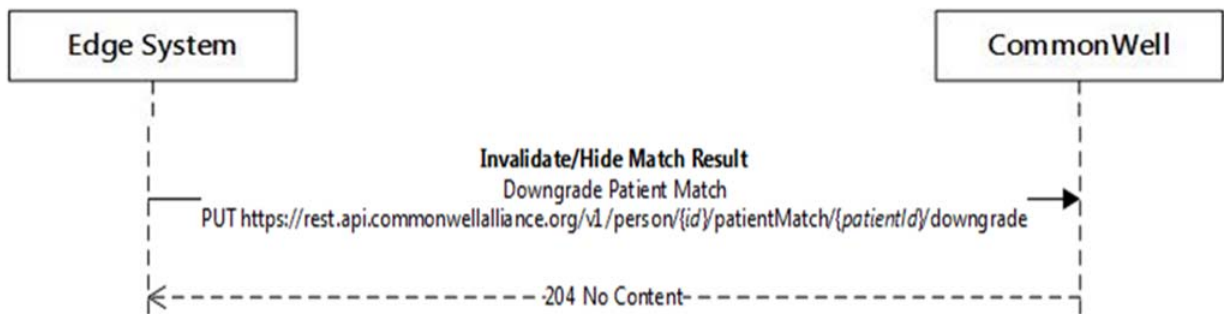


#### 7.5.4 Alternate Flows

#### 7.5.5 Exception Cases

Same as Scenario 1.

#### 7.5.6 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

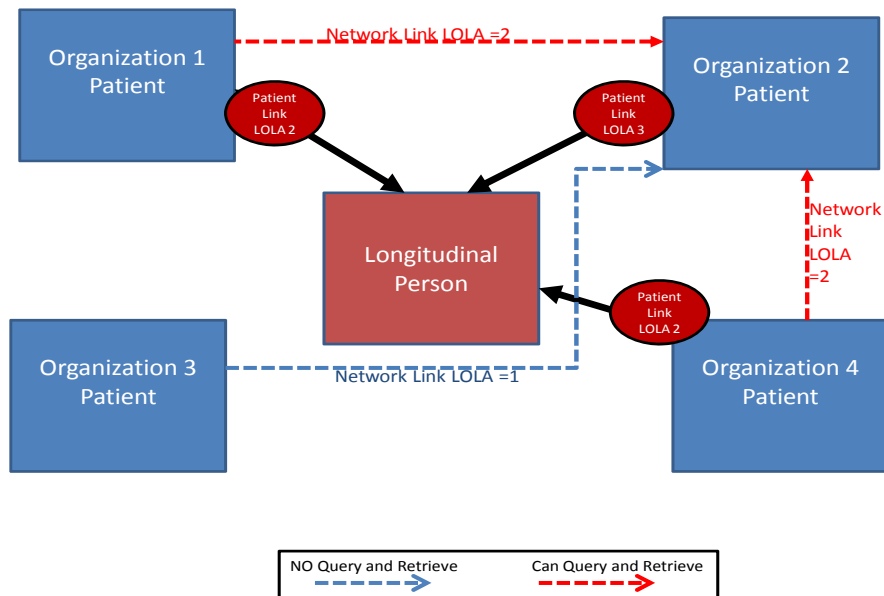
## 7.6 Scenario 4 – As an Edge System user, I can remove a Patient from probabilistic matching (inactivate Patient)

### 7.6.1 Pre condition

Organizations 2 and 3 are members of CommonWell.

Demographic detail was entered incorrectly at Organization 3.

### World View from Organization 2



### 7.6.2 Scenario

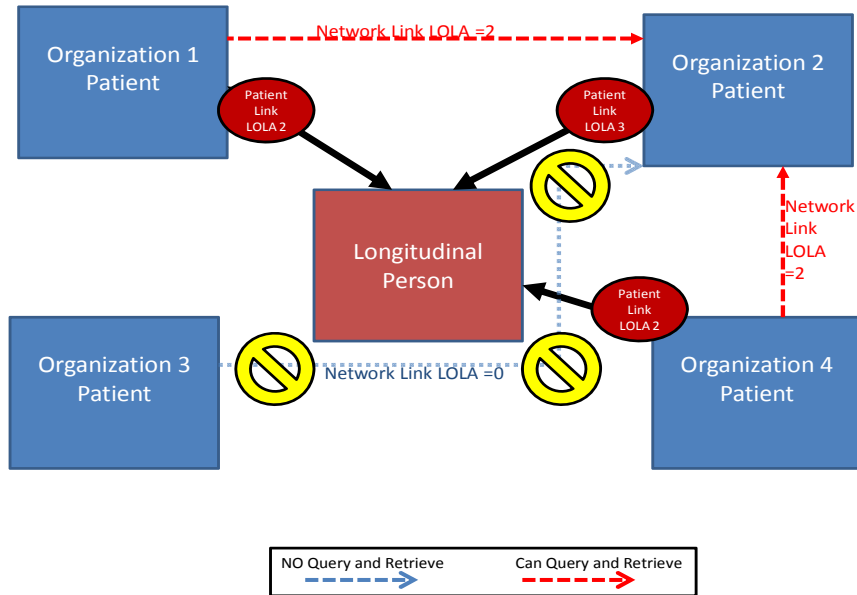
Patient Record displays in matching because demographic was entered incorrectly.

Network Link needs to be removed (Level 1 to 0). An Edge System may delete a link relationship between a Person and a Patient. This action will indicate to CommonWell that the individual represented in the Person resource is not the same individual represented in the Patient resource, and CommonWell will downgrade the LOLA of this Patient to 0 for all subsequent match queries associated with the Person. This includes Patient match requests from the Person, as well as any Network Link requests originating from another Patient resource that is linked to this Person.

### 7.6.3 Post-conditions

Network Link from Organization 3 is no longer visible to Organization 2.

## Update 2 World View from Organization 2



### 7.6.4 Alternate Flows

Patient wants to be inactivated from CommonWell (one of the 3 steps involved in unenrolling a Person).

### 7.6.5 Exception Cases

### 7.6.6 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

## 8 Patient Matches

*As an Edge System organization, I can get a list of Patient matches.*

### 8.1 Overview

Patient matching is the process of ensuring that entities on disparate systems both refer to the same individual. The ability to deliver high-assurance Patient Match results is the cornerstone of safe and effective document exchange. Participants must be able to understand how matches are established and their degree of reliability in order to trust the information that is obtained via the match.

### 8.2 Narrative

#### 8.3 Scenario 1 – As an Edge System user, I can search for Patient matches (Patient is registered)

##### 8.3.1 Pre-conditions

The Organization is registered with CommonWell.

The Patient is registered with CommonWell for this Organization.

##### 8.3.2 Scenario

As an Edge System user, I can get Patient Matches using demographic and Visit attributes to help me identify the Patient.

Attributes include LOLA, Organization Name, Organization Location (optional), and Visit Date (optional).

##### 8.3.3 Post-conditions

All possible matches for that Patient within the CommonWell network are returned along with key attributes.

##### 8.3.4 Alternate Flows

No Match – In the event that the patient has no records in any other CommonWell Organization's repository, no matches will be returned.

Known CommonWell ID – In the event that the Patient's CommonWell ID is known, the participant may skip Patient Discovery and proceed to Patient Locator Query.

##### 8.3.5 Exception Cases

Ambiguity – In the event that conflicting records or links to records result in a match ambiguity, no matches should be returned, and an alert should be raised to indicate a data integrity issue.

Unauthorized access: CommonWell finds that the Edge System user is NOT authorized.

Structural error:

- Incorrect formatting

- Missing required fields
- System unavailable
- Internal error

Conflict error in link request



## 9 Organization Management

*As an Edge System vendor, I can manage my Organization.*

### 9.1 Overview

Enables an Edge System vendor to create, edit, delete, and view their registered Organizations on the CommonWell network. By making this business workflow self-service, an Edge System vendor can more efficiently set up its participating Organizations, thus saving both time and money. (This will be done manually for the pilot.)

Edge System vendor	An Edge System vendor is a business entity that sells clinical software services to healthcare providers and/or Organizations.
Organization	<p>An Organization is a Repository and Registry of Patient information that acts as an assigning authority for a specific patient population.</p> <p>An Organization can only be created by an Edge System vendor that has a contractual business relationship with the hospital, health system, or group of health systems to manage its patient population.</p>

### 9.2 Narrative

#### 9.3 Scenario 1 – As an Edge System user, I can register my Organization

##### 9.3.1 Pre-conditions

Organization doesn't yet exist in CommonWell.  
 Required data is available for completion of registration.

##### 9.3.2 Scenario

As an Edge System organization, I can provide the identifying information necessary to create an Organization on CommonWell, including:

- R: Organization name
- R: Organization type
- R: Assigning Authority of Organization
- R: Organization location (i.e., city, state)
- R: Edge System vendor name
- R: XCA Gateway HomeCommunityID (e.g., OID)
- R: XCA Gateway endpoint for Document Query
- R: XCA Gateway endpoint for Document Retrieve
- R: Technical support lead name, title & contact information (e.g., email and phone)

- R: X509 Client certificate w/ thumbprint

### 9.3.3 Post-conditions

Successful addition of the Organization to the CommonWell network.

### 9.3.4 Alternate Flows

### 9.3.5 Exception Cases

## 9.4 Scenario 2 – As an Edge System user, I am able to edit information about my Organization in CommonWell.

### 9.4.1 Pre-conditions

Organization exists inside the CommonWell network.

### 9.4.2 Scenario

A source system within an Organization requests that their Edge System vendor add another gateway to CommonWell. –OR– Organization A changes its operating name from A to B.

### 9.4.3 Post-conditions

Edge System vendor is able to modify the profile of the source system and add a gateway to the Organization and/or change their name. Pilot scope requires this to be done manually.

### 9.4.4 Alternate Flows

### 9.4.5 Exception Cases

## 9.5 Scenario 3 – As an Edge System user, I can disable my Organization from CommonWell.

### 9.5.1 Pre-conditions

The Organization is in the CommonWell network.

### 9.5.2 Scenario

An Organization goes out of business.

### 9.5.3 Post-conditions

The Organization is flagged as disabled in the Edge System Registry.

The Organization is no longer solicited in document queries.

All Patient Records in the Patient Identity Service are disabled for that Organization. The Organization's Patient Records are not available for use (e.g., Patient Matching).

#### 9.5.4 Alternate Flows

#### 9.5.5 Exception Cases

Cleanup of PIX feed Patient flows into CommonWell could be a challenge. If a resource disables an Organization, this doesn't automatically disable the PIX feed. Human intervention would still be needed to stop the flow. Scripted cleanup would be necessary to ensure compliance to privacy/security expected by members.

## 10 Document Query and Retrieval

*As an Edge System user, I can query and retrieve medical records from other CommonWell member Organizations.*

### 10.1 Overview

Enables an Edge System (or authorized user within that Organization) to get a list of the documents that exist for a specific Patient from another Organization. Document Query should result in a response that includes *zero or more* document names, each with a minimum set of attributes: document name, document type (e.g., CCDA, radiology image), document creation date, and document source. By providing this document list (and additional document context), Organizations will benefit from more informed and more targeted data access (i.e., tell me what data exists, so I can decide what data I actually want to retrieve).

Upon viewing the list of documents returned, the Edge System (or authorized user within that Organization) selects the documents they would like to retrieve. The CommonWell Health Alliance (CHA) Broker, a mechanism used to securely broker the exchange, executes the request and returns the document(s). CommonWell will only return Patient documents if the Patient at this Organization has established a LOLA 2 link or higher with other Organizations.

### 10.2 Narrative

#### 10.3 Scenario 1 – As an Edge System user, I can use CommonWell to query for documents

##### 10.3.1 Pre-conditions

The Organization is already an active CommonWell-registered Organization.

The Person is enrolled.

The Organization has been granted rights internally to access CommonWell.

Pilot-only: The provider is issuing the query for direct treatment purposes.

##### 10.3.2 Scenario

The patient presents him/herself for an episode of care. The Edge System user opens the patient's chart.

The user queries CommonWell for documents.

##### 10.3.3 Post-conditions

Provider is able to view a list of documents created by responding Organizations along with associated metadata.

##### 10.3.4 Alternate Flow:

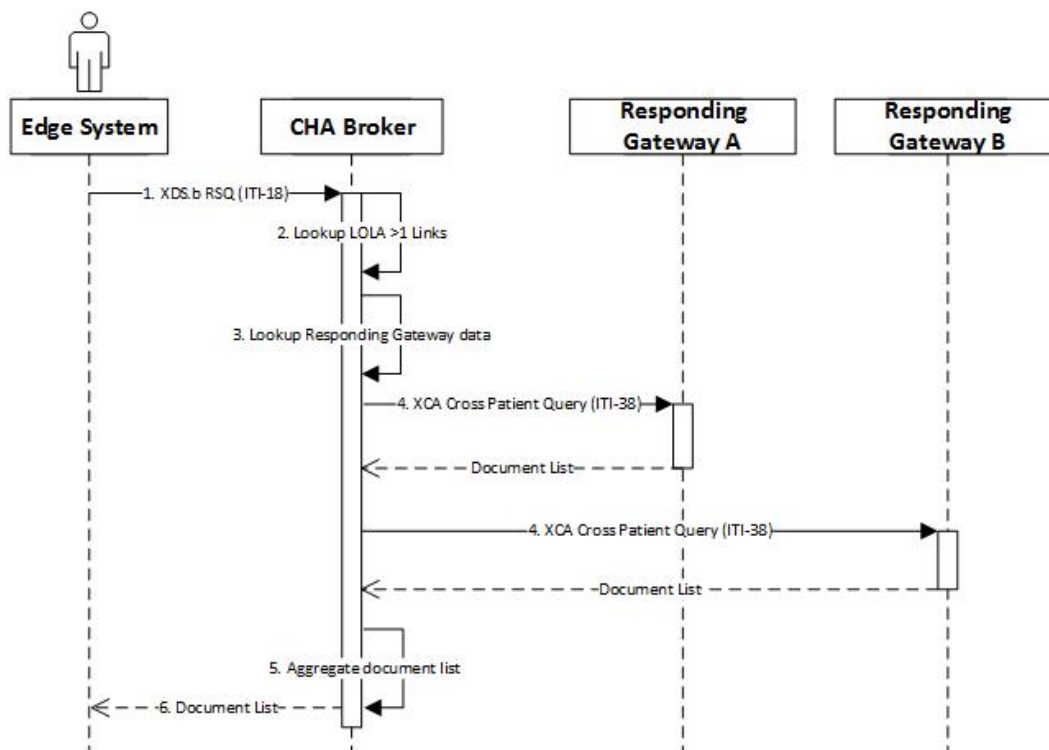
The person has not enrolled. The CommonWell services return an exception that the person is not enrolled.

As a clinical user, I need to find the clinical discharge summary documents for my patient. [Document TypeCode]

As a clinical user, I need to find any documents that are relevant to the patient and created after a given date. (e.g. last query date) [Doc Creation Date]

As a clinical user, I need to find any documents that are relevant to the patient pertaining to treatment after a given date. (e.g. last local visit date). [Service Start/Stop Dates]

### 10.3.5 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

1. The Edge System sends a FindDocuments Registry Stored Query (ITI-18) message to the CHA Broker. The request message contains the Local Patient Identifier for the patient.
2. The CHA Broker uses the Local Patient Identifier to lookup the Remote Patient Records with LOLA 2 or higher.
3. The CHA Broker references the Responding Gateway configuration for the Organizations corresponding to each of the Remote Patient Records.

4. The CHA Broker sends a Cross-Gateway Query (ITI-38) request to each of the Responding Gateways.
5. The CHA Broker aggregates the document lists returned by each of the Responding Gateways.
6. The CHA Broker returns the aggregated document list to the Edge System.

## 10.4 Scenario 2 – As an Edge System user, I can retrieve a patient document via CommonWell

### 10.4.1 Pre-conditions

The Edge System user has performed the query use case.

### 10.4.2 Scenario

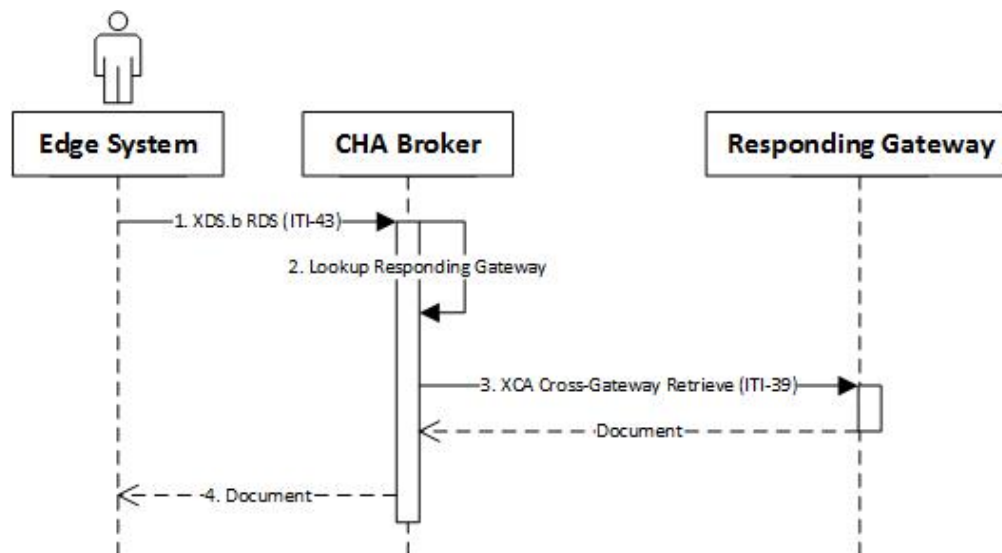
As an Edge System user, I can retrieve a Patient document via CommonWell.

### 10.4.3 Post-conditions

The Initiating Gateway retrieves the Patient document from the source and returns it to the Edge System user (document consumer).

### 10.4.4 Alternate Flow

### 10.4.5 Transactions



Reference pulled from *CommonWell Pilot Services Specification v1.16*.

1. The Edge System sends the CHA Broker a Retrieve Document Set (ITI-43) request message which includes the required identifiers: *HomeCommunityId*, *RepositoryUniqueId*, and *DocumentUniqueId*.
2. The CHA Broker looks up the Responding Gateway configuration for the Organization corresponding to the requested document.
3. The CHA Broker sends a Cross-Gateway Retrieve (ITI-39) request to the XCA Community's Responding Gateway service endpoint.
4. Once the document is received from the Responding Gateway, the CHA Broker forwards the response to the Edge System.

## 10.5 Scenario LAB– As a source system for CommonWell, I can fulfill the request for documents via query and retrieve transactions.

### 10.5.1 Pre-conditions

The Edge System has registered as an Organization within the CommonWell network. The person has been enrolled. The patient has provided consent for query and retrieval.

### 10.5.2 Scenario

As a Responding Gateway, I can fulfill the request for documents for a patient known to my Organization and to CommonWell.

### 10.5.3 Post-conditions

The Document Query returns a list of documents with metadata.

The Document Retrieve returns a document set to the CHA Broker.

### 10.5.4 Alternate Flows:

No documents available.

### 10.5.5 Error Conditions:

Organization is no longer a member of CommonWell.

Patient has revoked consent. Document is corrupted. Endpoint is offline.

## 11 Appendix

This appendix to the specification provides guidance for members who deploy CommonWell only to the ambulatory care space.

### 11.1 Person Enrollment

Patient will be in person. Registration clerk will not always have access to their Electronic Health Record (EHR). Access to the Enrollment Application would be expected. Clerks will be able to engage the person directly (locally defined) for informed consent. The local Practice Mgmt system would typically capture the strong ID/driver's license (DL) as part of their existing workflow. A desk resource at the physician office would absorb an additional step in patient registration to capture Person Enrollment info. Streamlining workflow is critical to ambulatory adoption of the CommonWell solution. There is limited resource availability for data capture in the ambulatory space compared to acute care registrations. To minimize disruption, we will leverage the probability that a DL is already on file in the Practice Mgmt system. So, when a patient appointment is scheduled, person demographics are already known to the clerk to accelerate enrollment. Many physician offices are not currently engaged with HIE workflows, and this additional need for consent may not be a known capture process.

### 11.2 Person Unenrollment

Any resource within the office setting should be able to quickly unenroll a Person from CommonWell. This activity should not be limited to the registration clerk. Unenrollment in the acute care space would be handled typically via the registration/ business office. This drives a need for multiple user types to have access to the Enrollment Application. Simplicity in access and workflow for unenrollment is more important to the ambulatory space than acute care space.

### 11.3 Person Management

There is a separation of duties within the non-acute care space which is more pronounced. The ability to query for available documents is valuable to the registration workflow, but the ability to retrieve documents should be limited to the clinicians and not registration personnel.

### 11.4 Demographic Patient Update

These updates would not be coming from a registration system in the outpatient space. The feed would be coming from the Edge System itself.

### 11.5 Level of Link Assurance (LOLA) Management

If we don't have service dates tied to a patient demographic record, there may be less detail per encounter. This would create challenges for assigning LOLA values for Network Links. The outpatient space doesn't always populate the PV1 segment in the PIX feed while the acute space typically does. (A04 for first Visit and A08 for subsequent Visits). These segments are not always triggered unless the demographics actually change. Depending upon the staffing levels of the Organization, LOLA modifications in the acute space may be performed by different roles than the ambulatory space.



## 11.6 Patient Matches

Note that the absence of service dates coming from ambulatory systems creates uncertainty in the matching process. A04 transactions will typically only be sent by ambulatory systems when new patients arrive. The A08 transactions will be sent only when a change of demographics is captured. (This includes changes to spelling.) There can be a significant time gap between pre-registration and actual clinical content creation. Thus retrieval would be impossible.

## 11.7 Organization Management

Since there is an assigning authority built at the Organization level, this typically aligns with the registration system. In the ambulatory care space, we have a similar concept, but it aligns with the OID. We expect to see multiple Organizations operating within a single Edge System. We also expect to see multiple Edge Systems operating within a single Organization.

## 11.8 Document Query and Retrieval

Front desk resource in front of patient/person will not have the workflow task to initiate a query. These resources may not have access to the EHR role which would enable a query. This could require a change to the workflow for the front office resource. For returning patients, the query could be pre-initiated or pre-retrieved before their upcoming Visit. This user may not be a clinical resource but would have knowledge of the medical records process. The user could simply generate the Document Query but hold the returned metadata for the clinician to review. Then the retrieval decisions would take place at different times by different user roles. How long should we hold the metadata for retrieval? Ambulatory would typically be run as a real-time activity but not always.

Info contained within Ambulatory EHRs is generated at a point in time. Some documents available in the systems are captured from external sources. These documents are often not owned by the local Ambulatory system (document source systems) and may belong to other CommonWell endpoints. This could create duplicate documents in the network. Sharing of this content could create confusion. This concern is not focused on the core CCD/CDA documentation. Surgical summary notes and other physician notes are documents that are attached to the patient's chart, but shouldn't be included in the sharable list of documents. Their retrieval should be deferred to their original source (responding system).