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The Use Cases (Part 2 of 2) are part of and are incorporated into the CommonWell Health Alliance Specification. The Use Cases described in this Appendix have been approved by the CommonWell Health Alliance.


1 Person Enrollment

As an Edge System user, I can manage enrollment of Persons 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.

Registration clerks are often frustrated when they are asked to add new steps to their workflow without receiving any benefit from the activity. By including a point-in-time indicator of network value for a single person, registration clerks can focus on enrolling those who immediately benefit from interoperability. The service returns an indicator that the patient’s demographics match possible network patients inside the system. Note that the indicator does not tell the clerk the names or the provider locations where links are found as this violates HIPAA rules. These potential links with named provider organizations are only visible to the clerk after the patient has provided consent to join CommonWell.

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.

If a user decides to unenroll from CommonWell, 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 Systems until such a time that the Person re-enrolls from a participating Organization.

1.2 Narrative

A registration clerk at a provider organization can check for the presence of potential patient matches before deciding to enroll a person into CommonWell. It is a point-in-time indicator of network value for a single person. By returning an integer instead of a Boolean value for potential links, the service will enable members to innovate around how they use this link count. This number only represents the number of unique orgs visited. It doesn’t reflect how many visits happened at that organization. For example, 12 visits in the last 12 months across two organizations returns a value of two.

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

1.3 Scenario 1 – As an Edge System user, I can check for possible Patient matches prior to enrolling a Person into CommonWell.

1.3.1 Pre-conditions
The patient presents him/herself at the physical location of a participating Organization.
The Person is not yet enrolled in CommonWell.
The Patient is registered with their local Organization.
The Organization is registered with CommonWell.
At least one of the Patient’s other providers is registered with CommonWell.

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 checks for possible patient matches prior to enrollment and before giving Frank any information about CommonWell.

The pre-enrollment check service uses the demographics captured by the Edge System during registration to query the CommonWell API in the background.

1.3.3 Post-conditions
The query response indicates the number of possible patient matches.

1.3.4 Alternate Flows

1.3.5 Exception Cases

1.3.6 Expected Actions

1.3.7 Transactions
Reference added to CommonWell Services Specification v2.1.

### 1.4 Scenario 2 – As an Edge System user, I can enroll a Person into CommonWell.

#### 1.4.1 Pre-conditions

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

#### 1.4.2 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.

#### 1.4.3 Post-conditions

Frank is enrolled as a new Person in CommonWell. The authoritative ID is consumable in CommonWell.

#### 1.4.4 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.

#### 1.4.5 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.
1.4.6 Expected Actions

1.4.7 Transactions

[Diagram]

Reference pulled from CommonWell Pilot Services Specification v1.16.

1.5 Scenario 3 – As an Edge System user, I can unenroll a Person from CommonWell

1.5.1 Pre-conditions
The person has enrolled in CommonWell.
The person presents him/herself at a participating Organization.

1.5.2 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.

1.5.3 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).

1.5.4 Alternate Flows
The patient was not enrolled as a Person. CommonWell returns that the Person is not found.
1.5.5 Exception Cases

1.5.6 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*. A person can be re-enrolled by following the workflow described in the Enroll Patient use case section 1.4 again.

1.6 Scenario 4 – As an Edge System registration clerk, I can enroll a Person following an enrollment directive from his or her authorized proxy

1.6.1 Pre-conditions
Patient is registered at a CommonWell-enabled facility.
Authorization for the proxy individual is verified and documented by the registering provider.
When linking visits, patient is already enrolled in CommonWell.

1.6.2 Scenario
Registration clerk verifies proxy rights of patient’s proxy during registration process.
Registration clerk obtains permission to enroll patient in CommonWell network.
Registration clerk obtains proxy’s full name and relationship to the patient.
Registration clerk enrolls the patient, recording the acquired proxy information.
CommonWell creates the person record, including the proxy’s full name, relationship, and the date of this enrollment activity.

*Narrative Example – Minor/Parent or Guardian*

Child Jones is a 5-year-old girl brought to the Emergency Department for treatment of an asthma attack. She is accompanied by her mother, Susan Jones.
The ED registration clerk admits Child, documenting that Susan is her parent and has guardianship of Child. As part of the admission process, the registration clerk asks if Child may be enrolled in CommonWell. Susan agrees and verifies links for two (2) other organizations where Child has been seen.
CommonWell creates a person record and links the three (3) patient records (two remote and one local) to Child.
Narrative Example – Incapacitated Adult:

An incapacitated adult patient is brought to the cardiology clinic for evaluation. The patient is accompanied by an individual who has been given medical power of attorney. During the registration process, the office receptionist verifies that this proxy has legal authority to provide consent for treatment. The receptionist asks if the patient can be enrolled in CommonWell. The patient's proxy gives permission and verifies six (6) out of ten (10) potential links. CommonWell creates a person record and links the seven (7) patient records (six remote and one local).

1.6.3 Post-conditions
The patient is enrolled in CommonWell.

1.6.4 Alternate Flows

1.6.5 Exception Cases

1.6.6 Expected Actions

1.6.7 Transactions

1.7 Scenario 5 – Self-service enrollment

As a patient of a CommonWell-connected “tethered” patient portal (TPP) associated with my care team, I can enroll myself in CommonWell in order to begin the process of allowing my providers to more efficiently share my health data.

1.7.1 Pre-conditions
The TPP is provided by a site of care where I have previously been seen. The TPP in question has been extended to add interface elements related to this process. In the case that the patient portal is provided by a third party, this product must be able to be extended to afford these interactions, or the CommonWell member must be capable of providing these interfaces to the patient in some other manner. The “local” Organization is a participant in CommonWell. The patient is not a minor and is not incapacitated. The TPP is capable of initiating CommonWell transactions. The TPP patient is identified and authorized to use this service by the TPP product, and no new authorization mechanism is required in the CommonWell platform.

1.7.2 Scenario
Frank Nolan is a patient of Dr. Jeffrey Geiger. Dr. Geiger’s office provides patients access to a Web portal that Frank uses to find information about his care at that Organization.

Within that Web experience, Frank finds a branded control that represents CommonWell (for example, a button or tab) alongside a control that he understands to mean “information.” After learning more about CommonWell, Frank
returns to that interface and agrees to terms and conditions by checking a box. Frank then clicks Submit in order to enroll himself in CommonWell.

1.7.3 Post-conditions
The patient is enrolled as a new Person in CommonWell.

1.7.4 Alternate Flows

1.7.5 Exception Cases

1.7.6 Expected Actions

1.7.7 Transactions
2 Person Management

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

2.1 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.

2.2 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.

2.3 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.

2.3.1 Pre-conditions
The Organization is a member of CommonWell.
The person has a strong id available for the authorized user to access.

2.3.2 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.

2.3.3 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

2.3.4 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.
2.3.5 Exception Cases

2.3.6 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).

2.3.7 Transactions

Reference pulled from CommonWell Pilot Services Specification v1.16.

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

2.4.1 Pre-conditions
Person exists inside CommonWell.
The Edge System has the Person resource ID, for instance, using the PERSON Search use case.
2.4.2 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.

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

2.4.4 Alternate Flows
Person is not updated.

2.4.5 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.

2.4.6 Expected Actions
Negative
- Not Found: Respond with "404" status code.
- Presumed Deleted: Respond with "410" status code.
2.4.7 Transactions

Reference pulled from CommonWell Pilot Services Specification v1.16.
3 Patient Registration

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

3.1 Overview

CommonWell enables an authorized user within an Organization to create, update or merge a Patient that has a unique enterpriseID 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 enterpriseIDs, 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.

3.2 Narrative

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

3.3.1 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)

3.3.2 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.

3.3.3 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.

3.3.4 Alternate Flows

3.3.5 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, enterpriseID, Assigning Authority).
Samples of known errors are available inside the technical spec.

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

3.4.1 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.
3.4.2 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.

3.4.3 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.

3.4.4 Alternate Flows

3.4.5 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.

3.4.6 Transactions

Reference pulled from CommonWell Pilot Services Specification v1.16.

3.5 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.

3.5.1 Pre-conditions
Tyrel Lannister is Patient A in the local Organization and CommonWell.
Tyrell Lannister is Patient B in the local Organization and CommonWell.

3.5.2 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 “I” 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.

3.5.3 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.

3.5.4 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).

3.5.5 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.
4 Historical Data Backload

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

4.1 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.

4.2 Narrative

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

4.3.1 Pre-conditions
Organization has registered inside CommonWell.
The Organization has identified the population of Patients to upload to CommonWell based on policies.

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

4.3.3 Post condition
CommonWell accepts the backloaded data from the Organization and makes the data available in the network. Patients are registered inside CommonWell.

4.3.4 Transactions
PIX-based Historical Feed

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Add/Update a Patient
Adding or Updating a Local Patient Record
POST https://rest.api.commonwellalliance.org/v1/org/{orgId}/patientFeed
202 Accepted
Location: https://rest.api.commonwellalliance.org/v1/org/{orgId}/patient/{id}

Reference pulled from CommonWell Pilot Services Specification v1.16.
5 Demographics Patient Update

5.1 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.

5.2 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.

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

5.3.1 Pre-conditions
The Patient exists in the local organization system.
The Patient is registered in CommonWell for the local Organization.

5.3.2 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.

5.3.3 Post-conditions
The Patient Record in CommonWell for this Organization is updated with new demographic data

5.3.4 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.

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

5.3.6 Transactions
Use the same technology as the Patient Registration use case.
Reference pulled from CommonWell Pilot Services Specification v1.16.
6 Level of Link Assurance (LOLA) Management

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

6.1 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.

6.1.1 Correlated Linking

Correlated Linking (section 6.7) supports the automated linking of patients to Organizations from whom they need to receive care but that they may not visit. The proposed approach is to create these links by sharing and comparing patient identifiers from an already-linked Organization, which is initiating an order or referral, and from the destination Organization that now needs access to the patient’s clinical data. If the identifier can be sent by both systems and validated along with a demographic match, CommonWell dynamically creates a level 2 Link between the acting systems.

Correlated Linking is intended to allow CommonWell-connected Organizations that do not routinely interact face-to-face with patients to obtain data via the CommonWell network. Many HIT workflows require providers to access clinical data although the patient has not yet (or will not) be present at their facility to authorize a CommonWell link.

For example, in a retail pharmacy context, pharmacists can be required to acquire additional clinical data points prior to filling a prescription, in order to be compliant with regulatory and payer requirements or to facilitate additional healthcare services to improve patient outcomes.

This is a separate use case from existing Patient-to-Person linking and relies on reliable and available patient identifiers to correlate a patient to a person in an automated fashion.

6.1.2 Shared ID Link

Shared ID Link (section 6.8) is an automatic confirmation of a patient link for patients that have already been validated by other endpoints within a large health organization. The larger health organizations in the country have many different clinical systems deployed across many facilities.

Large health systems typically have an enterprise/corporate MPI service that acts as the patient identifier “source of truth.” Revenue cycle systems are typically assigned this duty. New enterprise identifiers are passed downstream via ADT interfaces to different vendor systems within the large health organization. This use case enables auto-confirmation of patient links that match enterprise/corporate MPI numbers and patient demographics.

This approach eliminates the need for manual linking of patients by registration clerks within the same enterprise. The unique identifier assigned by the enterprise is easy to validate and to correlate.

6.2 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.
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.

**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.
World View from Organization 3

World View from Organization 4
6.3 Scenario 1 – As an Edge System user, I can add a link (linking Patient to Person)

6.3.1 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

6.3.2 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.

6.3.3 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

6.3.4 Alternate Flows

6.3.5 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

6.3.6 Transactions:

![Diagram of network links and patient connections]
6.4 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).

6.4.1 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

6.4.2 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.

6.4.3 Post-conditions

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

6.4.5 Exception Cases
Same as Scenario 1.

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

6.5.1 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

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

6.5.3 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

6.5.4 Alternate Flows

6.5.5 Exception Cases
Same as Scenario 1.

6.5.6 Transactions

Reference pulled from CommonWell Pilot Services Specification v1.16.
6.6 Scenario 4 – As an Edge System user, I can remove a Patient from probabilistic matching (inactivate Patient)

6.6.1 Pre-condition
Organizations 2 and 3 are members of CommonWell.
Demographic detail was entered incorrectly at Organization 3.

World View from Organization 2

6.6.2 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.

6.6.3 Post-conditions
Network Link from Organization 3 is no longer visible to Organization 2.
6.6.4 Alternate Flows
Patient wants to be inactivated from CommonWell (one of the 3 steps involved in unenrolling a Person).

6.6.5 Exception Cases

6.6.6 Transactions

Reference pulled from CommonWell Pilot Services Specification v1.16.

6.7 Scenario 5 – Automatic Correlated Linking

6.7.1 Pre-conditions
- The Patient is enrolled in CommonWell.
- The Patient is present in the upstream system.
- Both the upstream and downstream systems are running CommonWell-enabled services.
• The upstream system can include (within an order or referral) the necessary additional data elements to support Correlated Linking.
• The downstream system can consume the necessary data elements to enable Correlated Linking.
• The downstream system can transmit these data element(s) and identifiers to CommonWell.

6.7.2 Scenario
A referral or order is sent to a known downstream system. In the message associated with this order, the upstream system includes its local patient ID.

This same identifier is then sent to CommonWell from the downstream system along with its local patient ID within a PIX message. The upstream local ID, now as a shared identifier having been sent by both systems, can be used to validate the identity of the patient as the same person. To accomplish this, CommonWell validates that:

• These patient identifiers are the same.
• The demographic match meets current match criteria.

6.7.3 Workflow
An order or referral is created for a patient (either electronic or written). The ordering system’s local patient ID is sent to the downstream system within the order or referral. This same unique identifier for the patient is then sent to CommonWell from the downstream system within a PIX registration message. This shared identifier can be used to correlate the identity of the patient as the same person. CommonWell validates the patient identifiers between the initiating and receiving Organizations. CommonWell validates that the demographic match meets current match criteria. CommonWell creates a LOLA 2 link between the two acting systems.

6.7.4 Post-conditions
• A LOLA 2 link is created between the upstream and downstream patient records.
• Downstream system has access to CommonWell document query and retrieval services.
• Other CommonWell Organizations will be able to query for documents from the downstream system.
• Query and retrieval actions that traverse correlated links are logged distinctly.
• Correlated link creation is logged distinctly from normal link creation.
• Correlated links are flagged as such.

6.7.5 Alternate flows
If no match to an enrolled person is found in CommonWell for the patient that is submitted, the registration message will be treated as a typical registration message and follows the Registration use case.

If a correlated link is incorrectly created, the existing ‘downgrade’ use case will support correcting the error.

Persons will not always be enrolled at the first provider encountered. The patient’s registration details will still flow into CommonWell even when the person has not yet enrolled. These patient identifiers will flow into CommonWell
via PIX, as well as in the order or referral. These values will still be available if the patient enrolls at the downstream system.

6.7.6 Exception Cases

6.7.7 Expected Actions

6.7.8 Transactions

6.8 Scenario 6 – Shared ID Link

6.8.1 Pre-conditions
- Patient is enrolled in CommonWell
- Patient is present in the enterprise MPI
- Both the upstream and downstream systems are running CommonWell-enabled services

6.8.2 Scenario
As a departmental EHR system, I can reuse an enterprise MPI number (already known to CommonWell) to automatically link a patient's records.

6.8.3 Workflow

0-Inpatient Provider Org A and Ambulatory Org B are both owned by Healthcare Corporation C. This parent organization assigns the EMPI identifiers for A and B systems.

1-Patient presents first at the outpatient pavilion and is registered with local EHR system A. The EMPI number from the enterprise registration system is generated for the patient and sent to EHR system A. Then EHR system A sends this EMPI to CommonWell via PIX/REST along with the patient’s demographics. The patient has a provider visit where tests and observations are performed and then leaves. (STEPS 1-3 in diagram)

2-The patient presents next at an Ambulatory Care provider B in the same building complex. This provider shares the same enterprise MPI engine but not the same EHR software. The provider attempts to register the patient locally into system B and notices that an EMPI is already generated for the patient. The registration of the patient into EHR system B generates a new PIX/REST transaction to CommonWell along with the existing EMPI number. (STEPS 4-6 in diagram)

3-CommonWell receives both sets of demographics and matching EMPI numbers from the registration systems. The system compares the patient demographics from both providers and then compares the EMPI numbers. If they match, a LOLA equivalent link from the second provider is automatically processed and the provider can begin Query & Retrieve activities. (These links will be tracked independently) (STEPS 7-9 in diagram)

Historical backload model would automatically batch link the All PATIENTS with a new EMPI number.
6.8.4 Post-conditions
A LOLA2+ equivalent link is created for EHR B and the provider can begin query and retrieve capabilities. A LOLA2+ equivalent link is created for EHR B and the provider can begin query and retrieve capabilities.

Enterprise AutoLinking Workflow

6.8.5 Alternate flows
An alternative to our core workflow is to require the Service Provider to return foreign identifiers every time a LOLA 1 match is found. This response to a probabilistic match could include a list of likely identifiers which can be used later to drive automated linking. This empowers the vendors to decide for themselves if they want to pursue Shared ID Link.

6.9 Scenario 7 – Patient-Directed Link Management

6.9.1 Pre-conditions
- Person is already enrolled in CommonWell.
- Person has a relationship with a portal vendor who is a member of CommonWell.
- Person had visits at one or more CommonWell-enabled provider sites.
- Person has authenticated to a member-provided Portal solution and this authentication meets NIST 800-63 standard level 3.
6.9.2 Scenario
In order to support patient-directed interoperability, CommonWell provides a “choose-ahead” approach for patient-initiated establishment of links. This model requires the patient to pre-select Organizations where they have been seen from a list of CommonWell-enabled facilities. After selecting these locations, live registration messages resulting from subsequent visits provide final confirmation and establishment of these patient-initiated links.

- Person selects points of care which they have visited from a list that does not include indication of potential matches. The endpoint will be responsible for supporting the and selecting the organizations. CommonWell already has an API supporting Organization management which can be queried to return a list of provider Organizations.
- CommonWell receives these link upgrade requests from the person. CommonWell already has received a PIX registration message from these provider Organizations for that person.
- The two lists are compared by CommonWell for overlap.

6.9.3 Workflow
Patient has already enrolled in CommonWell from within a connected Portal solution.

Patient’s demographics can be used to identify a local geography to begin the search for potential providers.

Enrolled person flags both prior and future sites to engage. LOLA 2 links are created for prior visits where the demographic match is 100% (90% if PHR supports additional matching criteria such as cell phone, e-mail, etc.).

Patient visits their provider and registers normally.

PIX messages are sent to CommonWell as an outcome of these encounters.

Links are confirmed for these new care locations automatically.
1. Pt is seen by provider verifies links
2. Provider via Member EMR queries for documents
3. CommonWell fans out document query based on validated links
4. Available documents returned to requesting provider
5. Document created by provider is available for CW requests

Current data flow

1. Pt creates an account with PHR member
2. Identifies providers they have seen
3. PHR member requests potential CW matches
4. If patient identified providers match CW potential matches, LOLA2 links are created
5. Member PHR queries for documents found
6. CommonWell fans out document query based on validated links
7. Available documents returned to CommonWell Member PHR
8. PHR provides CDAs to network

Proposed PHR data flow

6.9.4 Post-conditions

- LOLA 2 links are created for the facilities chosen by the patient which align with these registration messages. Points of care chosen by the patient which do not have a registration message will be ignored.
- Query and Retrieve capabilities are then activated for these facilities.

6.9.5 Alternate flows

6.9.6 Exception Cases

6.9.7 Expected Actions

6.9.8 Transactions
7 Patient Matches
As an Edge System organization, I can get a list of Patient matches.

7.1 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.

7.2 Narrative

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

7.3.1 Pre-conditions
The Organization is registered with CommonWell.
The Patient is registered with CommonWell for this Organization.

7.3.2 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).

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

7.3.4 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.

7.3.5 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
8 Organization Management

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

8.1 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.)

<table>
<thead>
<tr>
<th>Edge System vendor</th>
<th>An Edge System vendor is a business entity that sells clinical software services to healthcare providers and/or Organizations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>An Organization is a Repository and Registry of Patient information that acts as an assigning authority for a specific patient population. 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.</td>
</tr>
</tbody>
</table>

8.2 Narrative

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

8.3.1 Pre-conditions
Organization doesn’t yet exist in CommonWell. Required data is available for completion of registration.

8.3.2 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
8.3.3 Post-conditions
Successful addition of the Organization to the CommonWell network.

8.3.4 Alternate Flows

8.3.5 Exception Cases

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

8.4.1 Pre-conditions
Organization exists inside the CommonWell network.

8.4.2 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.

8.4.3 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.

8.4.4 Alternate Flows

8.4.5 Exception Cases

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

8.5.1 Pre-conditions
The Organization is in the CommonWell network.

8.5.2 Scenario
An Organization goes out of business.

8.5.3 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).
8.5.4 Alternate Flows

8.5.5 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.

8.6 Scenario 4 – As an Edge System user, I can create relationships between a parent organization and facilities that are associated with the parent.

8.6.1 Pre-conditions
The parent organization is created in CommonWell.
Facility information is associated to the parent organization including name (text) and facility identifier (oid).

8.6.2 Scenario
An organization manages the patient identification for one or more child facilities where care is provided. The organization wishes to track activity at both the parent level including all of the associated child facilities as well as at each individual facility associated to the parent organization. The organization wishes to automatically link all facilities to the person when any of the facilities are identified as a LOLA2 match.

8.6.3 Post-conditions
All reports related to organizations will support the option of reporting at the parent organization level for both the organization only as well as the organization and all of its facilities.
All reports related to organizations will support the option of reporting at the individual facility level.
Any linking of patients to the parent or the facilities will link the patient to all facilities and the parent organization. CommonWell provides facility information for any patient match or potential link match request for display in the member product user interface.

8.6.4 Alternate Flows

8.6.5 Exception Cases
9 Document Query and Retrieval

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

9.1 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 report, 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.

9.2 Narrative

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

9.3.1 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.

9.3.2 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.

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

9.3.4 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]

9.3.5 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.
9.4 Scenario 2 – As an Edge System user, I can retrieve a patient document via CommonWell

9.4.1 Pre-conditions
The Edge System user has performed the query use case.

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

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

9.4.4 Alternate Flow

9.4.5 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, RepositoryUniqueIed, and DocumentUniqueld.

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.

9.5 Scenario 3 (LAB) – As a source system for CommonWell, I can fulfill the request for documents via query and retrieve transactions.

9.5.1 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.

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

9.5.3 Post-conditions
The Document Query returns a list of documents with metadata.

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

9.5.4 Alternate Flows
No documents available.

9.5.5 Error Conditions:
Organization is no longer a member of CommonWell.

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

9.6 Scenario 4 – As a patient, I can find and consume documents via a connected Portal web application

9.6.1 Pre-conditions
- Person has already been enrolled in CommonWell
- Patient has an active account to a provider’s patient web portal
- Portal vendor is a contributing member of CommonWell
- Patient has established an elevated LOLA with more than one provider
- Documents exist for that patient at the other provider locations in the network
- Documents have met the Member’s ‘delayed delivery’ criteria

9.6.2 Scenario
The design of the CommonWell platform has always been explicitly patient-centric. Today, our patients are interrogated for their consent to join the network and for link validation, but although they make these care-enhancing contributions of time and information, patients see little immediate benefit from enrollment.
With this use case, the Alliance improves the tangible value of CommonWell participation to the patient by allowing them to retrieve and view their own information within the existing web portal experiences that are offered by their providers.

This patient engagement solution enables enrolled patients to finally access the clinical data payload which has historically been only available to the provider. This use case applies only to portals which already manage patient access and identity.

9.6.3 Workflow

- The connected patient portal product leverages the existing links within CommonWell to find and display a list of available documents from linked providers.
- The available metadata helps the patient identify the document she wants to retrieve.
- The patient selects a document from a list.
- The patient portal’s server-side software initiates the transaction to retrieve the specified document through CommonWell, in the same manner that a conventional Retrieve transaction is initiated.

9.6.4 Post-conditions

- The portal processes the content within the CDA and renders a patient-friendly version for viewing

9.6.5 Alternate Flows

9.6.6 Exceptions / Negative Flow

The patient is deemed incapable of comprehending their own medical information.

The information remains provisionally viewable for the patient portal, but it can be viewed by a Proxy of record.

Its provisional status will persist until the patient is authorized by the source provider to view the document within the patient portal.

The standard flow of documents across providers remains unchanged by any of these suggested workflows.

9.6.7 Error Conditions
10 Release of Information – Payment and Health Care Operations

As a Data Retrieval Vendor requesting clinical data on behalf of Payers, I can use a directed query to retrieve data for patients.

10.1 Background – Payment and Health Care Operations

The Payment and Health Care Operations use case includes any activities as defined by Health and Human Services Uses and Disclosures for Treatment, Payment, and Health Care Operations. There are five example activities outlined below.

1. Risk Profiles – Health Plans need to create complete, accurate risk profiles for members to support value-based care contracts and population health adjustments, or to confirm the accuracy of a claim (MACRA).
2. Quality Management – Health Plans need to augment claims data to satisfy quality reporting requirements and improve quality care scores, and to reduce preventable medical errors (e.g., HEDIS, STARS, MACRA).
3. Care Coordination – Health Plans want to create a complete clinical record for each of their members to improve care coordination and provide optimum medical care (e.g., reduce redundant care; shift to more proactive/timely care; better informed, more accurate medical treatment recommendations) (MACRA).
4. Member Experience – Health Plans want to improve member experience by improving processes between the payer and provider so members have fewer issues, less waiting, better planning information, and more cost transparency.
5. Medical Necessity – Health Plans review select medical claims and associated medical documentation to ensure the services billed were medically necessary and in compliance with Payer rules.

10.2 Overview

The manual method of chart retrievals can take weeks to months. To accelerate the time-to-value in chart retrieval workflows, CommonWell will be inserted into the document retrieval process. This will drive business value for members, via a new revenue stream, and for providers, by reducing the cost of labor for servicing these requests manually.

Purpose of Use
The applicable Purpose of Use for these requests will be either PAYMENT or OPERATIONS.

10.3 Narrative Example

- Data Retrieval Vendor (DRV) has an agreement with Payer to pull charts to support patient risk adjustments for CMS. DRV receives a roster of 10,000 patients and they want to use the CommonWell network to pull documents for these patients.
- DRV uses an ORG search API to lookup the Provider Organization for the targeted query.
- If the ORG is found, the DRV uses a patient search (XCPD) to find a patient match.
- If the patient is found, the DRV will query the network with the service date range.
- If documents are found, the DRV will retrieve the documents within the service date range.
- CommonWell creates a detailed audit message which captures documents pulled by the DRV. These audit messages will populate the disclosure reports when requested.

10.4 Scenario 1 – As a Data Retrieval Vendor, I can query and retrieve documents to support payer activities under Payment and Health Care Operations

Foundational Requirements

These requirements are considered essential to solve the problems and reach the goals above.

Requirement 1 – As a Data Retrieval Vendor, I can bypass Person Enrollment.

Requirement 2 – As a Data Retrieval Vendor, I can use XCPD to find patients.

10.4.1 Pre-conditions

- The DRV has electronically captured appropriate consent/authorization and full demographics for patients. The DRV does not have patient consent captured; the patient consent or authorization for the chart retrievals is granted between the patient and their payer.
- Provider Organizations (ORGs) that want to participate in the chart retrieval process for Payment and Health Care Operations will need to direct their EHR vendor to enable these Purposes of Use in the Management Portal.
- There is a BAA in place between the payer and the DRV. A record of authorization for the request between the payer and the DRV must persist after the transaction for auditing.
- There is an existing relationship between the patient, payer, and provider. Requestors must have authorization for the request prior to adding the patient and service date(s) to the patient roster that is provided to the CommonWell network and must be able to provide the audit data around that request.
- The network access granted to pull these clinical documents has not expired.
  - This space is heavily regulated, so we want to minimize the access window as much as possible (i.e., 180 days).
  - Queries are always presented to the network with a date range to maintain privacy.
- Properly formatted documents exist on the network for the patient.
  - Interested in both XML and static PDF docs.
  - Not interested in Longitudinal Patient Records.
• The ORGs targeted by the queries have signed a new data-rights addendum with their EHR vendor, if applicable.

10.4.2 Scenario 1 – As a Data Retrieval Vendor, I can query and retrieve documents to support payer activities.

Requirement 1 – As a Data Retrieval Vendor, I can bypass Person Enrollment.

For Payment and Health Care Operations, chart retrieval requests will be bypassing the person enrollment requirement as the patient has already granted access via their agreement with their payer.

Workflow: A roster of patients with demographics is presented to the network. This is similar to a registration feed. This patient roster will also have:
1. ORG info to support targeted query
2. Service dates to constrain the query results

No enrollment will take place. The person consent was granted to the Payer to support operations and payment when they agreed to the Payer’s terms.

The patient cannot get onto the roster without an existing relationship to the payer making the request. The roster indicates the patient, the organization, and the date of service.

Persons will still need to enroll if they want TREATMENT and PATIENT ACCESS transactions to flow as there is no overt consent provided.

Requirement 2 – As a Data Retrieval Vendor, I can use XCPD to find patients.

Use cross-community patient discovery (XCPD) to find patients based on authorized requestors patient roster.

Workflow: Authorized requestor will present a patient roster with service date(s) and provider organization and CommonWell will do a targeted lookup for that patient based on the data provided. The patient will not be linked to any care locations via the Payment and Operations path, unlike the Treatment and Patient Access path.

XCPD will be the only method to locate patients for the Payment and Operations Purposes of Use.

Risks and other considerations

CommonWell ORGs will need to opt-in via their EHR vendor to participate in this use case.

For the purpose of this Use Case, Carequality queries for Payment and Operations will not be supported.

10.4.3 Post-conditions

• Patient matches have been found.
• DRV can query and retrieve clinical documents for the patient.
• Documents are found by the network and retrieved.
• DRV maintains consent documentation that is made available for any future audit.
• Service Provider maintains audit records of disclosures.
### 11 Event Notifications

*As an Edge System Organization, I can subscribe to event notifications for linked patients.*

#### 11.1 Overview

In an effort to improve patient care coordination and outcomes, the Event Notification Service publishes admission, discharge, and transfer notifications so that downstream providers can subscribe to receive alerts about their patients that are shared between care settings. The following events will trigger a notification:

- Admit/Visit
- Transfer
- Discharge
- Register
- Transfer – Outpatient to Inpatient
- Transfer – Inpatient to Outpatient

When the applicable event occurs, this service will notify care providers that are enabled with ENS for patients that are linked between care organizations.

#### 11.2 Narrative

A patient has an existing care relationship with his cardiologist and regularly visits the practice for medication checks and echocardiograms. The patient and his family went on a hike two hours away and he suffered a myocardial infarction. He was rushed into the nearest medical center and was discharged after two days. Upon discharge, the medical center sent a discharge notification to CommonWell which was sent to the cardiologist. The patient’s cardiology practice followed up with him to schedule him to come in the next week and was able to use the CommonWell network to retrieve his discharge summary in preparation for his ambulatory visit. The cardiology practice does not have a working relationship with the medical center as they were several hours apart, but CommonWell was able to bridge the gap by matching the patient within the RLS.

#### 11.3 Scenario 1 – As an Edge System Organization, I can publish and/or subscribe to receive event notifications to the network.

##### 11.3.1 Pre-conditions

The patient must be enrolled in CommonWell.

The provider sites intending to send and/or receive notifications to CommonWell must be enabled to publish notifications in Management Portal for the appropriate transactions.

Patients must be linked to organizations that are subscribed to ENS.

##### 11.3.2 Scenario

The Medical Center sends all patient registrations into CommonWell and checks for enrollment and links all patients that are seen by the facility to ensure continuity of care within the CommonWell network. The Medical Center automatically sends admits, discharges, and transfer notifications to CommonWell which are then sent on to subscribing CommonWell sites.
The cardiology clinic receives all notification types from CommonWell for linked patients from publishing CommonWell organizations.

11.3.3 Post conditions
The cardiology clinic is able to review the data contained within the notification and determine the most appropriate next steps, including but not limited to querying the CommonWell network for clinical documents.

11.3.4 Alternate Flows

11.3.5 Exceptions / Negative Flow
ENS will not be supported for Carequality transactions.

11.3.6 Transactions

![Diagram showing interactions between Dr. Dan Cardiologist, CommonWell Services, and Medical Center.]
12 Ambulatory Appendix

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

12.1 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.

12.2 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.

12.3 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.

12.4 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.

12.5 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.
12.6 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.

12.7 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.

12.8 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).