Focus Area #3: Patient Identification

Background Material

This focus area concerns the process for connecting a patient in an EHR with a patient in the IIS so the vaccination record can be returned.

Information for the Group

In order for the group to understand this section they will need to be familiar with:

- HL7 v2 query (QBP & RSP).

This information for the group is not covered here in the background material.

Query Process

The standard for queries in HL7 follows a general process.

For the EHR:

- The EHR creates a query that includes the EHR patient id, the IIS patient id (if known), and patient demographic data that is known and that the EHR believes the IIS could use for matching. The contents of the query are normally the same for all queries, the EHR pulls all the data it has and sends to the IIS hoping the IIS will find the best match.
- If possible matches are returned the EHR must present the matches to the user to choose if one, or any, is good match. If the EHR is doing the query automatically then there is no user input and the EHR gives up and reports there is no match.
- Once the choice is made by the user the query is sent again, but this time the IIS patient id is added. This id was listed by the IIS on the list of choices. The EHR normally would also include the additional demographic information just as it sent originally.
- The IIS returns one or no matches. The results are shown to the user.

For the IIS replying to the query:

- The IIS first checks to see if there is IIS patient id. If so, it searches and finds the matching IIS record. The IIS will normally do a basic check to ensure that the demographic data is a close match for the record that is found. If the record looks like a plausible match then the record is returned.
- If that fails then the IIS looks to see if the EHR patient id is recognized. If there is a matching record for this then the IIS performs the basic check to ensure that the demographic data is a close match. If the record looks like a plausible match then the record is returned.
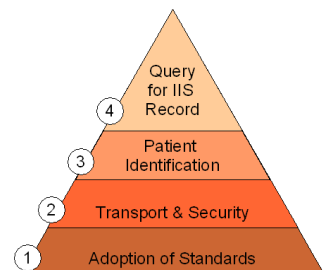
- If that fails then the IIS looks for a strong match based on the patient demographics. If the IIS finds one good match then the record is returned. Otherwise more than one possible match is returned.

Patient Identifiers

There are three main ways a patient is identified between two systems:

- The EHR receives the IIS id for the patient and stores it in the EHR.
- The IIS receives the EHR's id for the patient and stores it in the IIS.
- The EHR submits all the patient's demographic information and the IIS searches for and returns exact or possible matches based on its own criteria.

Benefits & Drawbacks

	Benefits	Drawbacks
Use IIS Patient Id	• Id is recognized by IIS and is universal for jurisdiction • Should be returned in all queries to IIS. • EHR can store and use to query the IIS to pull back specific record.	• Depends on deduplication and matching process in IIS or an EHR selecting the match when querying. • Can change as patients are merged. • Hl7 standard does not support for returning id in response to VXU.
Use EHR Patient Id	• Most IIS currently require and accept the EHR patient id. • Id can be registered with IIS when submitting vaccinations. • Most IIS use the EHR patient id as a strong match for queries. • All EHR systems have an EHR patient id.	• EHR Patient Id is not unique to jurisdiction, only guaranteed unique to installed instance of EHR. IIS must use the EHR Patient Id and the EHR facility id as a unique pair. • Can change when patients are merged. • Depends on the deduplication and matching process of IIS.
IIS support search by patient demographics	• Matches can be found even if submitted id is not recognized. • Supports querying IIS for patients that are not yet registered with IIS, or the IIS has not yet received.	• IIS must establish process for processing search based on given parameters.
EHR supports picking possible match	• Users can search IIS and see other close matches that the IIS is not confident are actually	• EHR must add support to allow users to see query results and make a

	matches. • Support scenarios where patient has not been sent to the registry or the registry is unable to make an exact match.	decision. • The EHR must decide whether to remember this decision for future queries on a patient.

Decision Point

	Recommend	Permit	Discourage
Patient linkage should depend on IIS patient id.			
Patient linkage should depend on EHR patient id.			
IIS should return an exact match based on the patient demographics when the patient ids are not recognized.			
IIS should return possible match(es) based on patient demographics when an exact match is not found. (Where allowed by local IIS policy and regulation.)			
EHRs should support the return of possible matches by allowing the EHR user to pick correct match and re-query.			

IIS Patient Ids

IIS patient ids can be used by the EHR to link the patient to a specific IIS record. This id has been obtained the following ways:

- When the EHR queries the IIS, the IIS can send back the IIS Patient Id with an exact match or on a set of possible matches.
- The user can find the IIS patient id (normally by logging into the IIS directly) and enter in the id directly into the EHR.
- The IIS returns the IIS patient id when the EHR updates the IIS. (This method is not supported by HL7.)

In order for the IIS Patient Id to work effectively the following must be ensured:

- The EHR must allow the user to remove any IIS patient id, once it has been set.
- The EHR should make the linking of the record to the IIS patient id visible to the user.
- The IIS must not forget the IIS patient id. The IIS may re-assign a patient a new id, or discontinue an id when merging records together, but must retain a link between the old id and the new one. This will allow the EHR to continue querying with the old id until it receives the latest id.

The following decision point will need to be considered if the group decides to recommend the use of patient ids.

Decision Point

	Recommend	Permit	Discourage
The EHR should be able to store the IIS patient id as			

part of the patient record.			
The EHR should automatically store the IIS patient id on records when it receives back an exact match.			
The EHR should store the IIS patient id on the patient record when the user confirms the match.			
The EHR should automatically store the IIS patient id when the user selects a possible match.			
The EHR should store the IIS patient id on a record when the user selects a possible match and confirms that IIS patient id should be stored.			
The EHR should allow user to remove or delete the IIS patient id from the patient record.			
The EHR should allow the user to edit, update or add the IIS patient id to the patient record.			

EHR Patient Ids

All EHR systems have some method of determining a unique id for the patient. This unique id is messages to the IIS when the EHR sends a vaccination update. In order for the EHR patient id to be used for queries the following standards need to be set:

- All EHRs must message the EHR patient id in all vaccination updates.
- As the EHR can send any number of ids in HL7 messages, there needs to be a standard for how the IIS knows which id is the EHR patient id.
- The IIS is required to store the EHR patient id for the patient, and must keep all copies of the EHR patient id for each EHR, even if the patient is later merged in the IIS.
- The IIS must store the patient id in connection with a unique IIS identifier for the submitting system. This is because EHR patient ids are only unique to a single sending system and can conflict with other EHR systems' patient ids.
- The IIS must use the EHR patient id as one of the strong identifiers when responding to queries. Note: the IIS only has to support EHR patient id querying for the system that submitted the id. The IIS does not have to allow EHR A to query for a patient using EHR B's patient id.

Decision Point

	Recommend	Permit	Discourage
The EHR should always send an EHR patient id with every update to the IIS.			
The IIS must associate EHR patient ids with patient records.			
The IIS must remember all EHR patient ids, even if the IIS has two or more EHR patient ids for the same patient and for the same EHR. (This would happen if the EHR has a duplicate and assigned the same person two different patient ids, and the IIS was able to merge the records. The IIS will need to keep both ids.)			

	Recommend	Permit	Discourage
The IIS should use the EHR patient id as a strong query parameter for the site that submitted that EHR patient id originally.			

Linking Patients

A patient is "linked" when the EHR either has the IIS patient id stored on the EHR patient record, or when the IIS has the EHR patient id stored on the IIS patient record. A "linked" record can now be retrieved easily from the IIS by simply querying with the shared id. A record can likewise be "unlinked" by either side forgetting, or removing the linking id.

For linking there are two basic options:

- Depend completely on the IIS deduplication and matching process to find the match.
- Automatically link to start with but get user input in cases were automatic linking cannot find a match.

Decision Point

	Recommend	Permit	Discourage
For simplicity, the national standard should assume that IIS deduplication and match processes are sufficient by themselves to link patients.			
For completeness, the national standard should include some element where the clinician can help find the correct match. This will help in situations where the exact match has not yet been determined, or other possible matches exist that have not been resolved.			

Verifying Match by Id

When the EHR queries the IIS it can find an exact match by id. The IIS often do a verification using the patient demographic data to assure that the patient is the correct one before returning. For example, if an EHR queried for patient 1234 "Sally Smith 4 years old" and the registry has patient 1234 "Tim Jones 2 years old" the registry would probably not return an exact match. Although the id was correct the patient demographics strongly indicate they are not matches.

This leads to another issue that has not been standardized. As the EHR is not aware of the criteria for returning an exact match, even with a known id, some EHR send the patient demographics from the original possible match list in order to pull down the correct record. Need to standardize this behavior.

Decision Point

	Recommend	Permit	Discourage
When the EHR queries again to get an exact match it should use the demographic record that is has recorded in the EHR.			
When the EHR queries again to get the exact match it			

should use the demographic data from the patient that was sent back from the IIS and which the user selected.			
The EHR should not send patient demographics when querying by id.			
The IIS should apply some type of logic to not return back exact matches if the patient demographics are sufficiently different.			
The IIS should return an exact match regardless of whether the patient demographics are similar or not.			

Basic Use Case

1. EHR sends vaccination update to IIS.
2. IIS adds the patient to the registry.
3. The EHR queries the IIS using the IIS or EHR patient id.
4. The IIS returns that patient, if found, otherwise returns a "not found" message.

New Patient Use Case

1. Patient is registered as a new patient in EHR.
2. Clinician wants to query for IIS record but does not know the IIS patient id and IIS does not know the EHR patient id as it has not yet registered the patient with the IIS.
3. The EHR sends a patient query with all the demographic patient information known to the patient.
4. The IIS responds with no matches, a set of possible matches, or one exact match.
5. The clinician reviews the response and may attempt to query again but this time using the ids returned by the IIS to retrieve the exact record.
6. The EHR may store the IIS patient ids associated with the patient for future queries to the IIS.

Variation on Basic and New Patient Use Case

In practice the need for the New Patient Use Case can occur during scenarios where the IIS patient id or the EHR patient id should be known to the other entity. This can occur under the following circumstances:

*   The IIS has received the EHR patient id but has not yet associated it with the patient record in the IIS. This can happen because:
    *   The IIS process for finding the match and adding to the registry has not completed.
    *   The IIS process has found more than one possible match and is holding the record for manual review before associating the EHR patient id with any record.
*   The IIS has associated the EHR patient id with only one of two possible matches.
*   The IIS has received more than one EHR patient id for the same patient for the same EHR and has only kept the most recent EHR patient id.
*   The IIS has associated the EHR patient id with the wrong patient.

Bad Links With IIS

If the EHR stores the IIS patient id then it should prepared to handle the situation where the IIS patient id is not the correct one for the patient in the EHR. The EHR user may have to contact the IIS directly to resolve the issue on the IIS end, but most definitely needs the ability to "delink" the patient. In some EHRs the user is allowed to edit and erase the IIS patient id. This is an effective way to allow the user full control over the IIS linking.

Discussion

Do we need a national standard for linking and unlinking?

Search Parameters

If the option for searching by parameters is recommended then some decisions should be made to standardize which fields are used for searching. EHR's should have a complete list of all fields that IIS may want searches to be performed by and a national standard for a minimum number of fields. In addition, there needs to be discussion about the treatment of the IIS Patient Id and the EHR Patient Id. Do these take precedent over other search fields? How much additional data needs to be sent with ids?

Notes

One member of the group recommends that Phone Number should be given more consideration than it has in the past. Phone numbers are now, more often than not, cell phone numbers and are becoming stable for longer periods of time. This can be used to find matches at a better rate, than even 10 years ago.

An EHR vendor indicated that while they understand mother's maiden name is a great match for the registry they don't collect it at the encounter with the patient. So it's not a good field to require or expect for searches.

Assignment

Discuss and great decision points for the group. Do not need to have final answers now, but it would be good to decide on a good starting list of fields that should be considered for queries. This list can be finalized later, not at this meeting.

Artifacts Needed

For the purposes of discussion the group needs to create the following items:

- Use case story(ies)
- Use case diagram(s)
- Lessons learned
- Decision points
- Recommendations
- Known needs
- Next steps

Use Case Story

A use case story is a list of steps taken by a user and the interaction of systems to achieve a specific goal. The goal of this focus area is to select a single use case but other use cases stories should be written as well if they are to be discussed in detail.

Use Case Diagram

Diagrams give a visual map to the story. Every use case story must have a corresponding diagram.

Lessons Learned

Past experience helps when making future plans. Gather information about lessons learned when implementing query support. Be sure to include lessons learned from both the IIS and the EHR perspective.

Decision Points

What are areas that need to be decided by the group? What are the options? What are the benefits and risks with each option?

Recommendation

What is the recommendation of the group for each decision point? If the group is divided then list the two or three top recommendations.

Known Needs

For each recommendation, list what support or help the EHR and IIS will need in order to meet the recommendation.

Next Steps

For each recommendation, list the next steps that will need to be taken.