

Developing a Nationwide Consensus on Bidirectional Query Immunization Exchange

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Work Group Meeting

- Held for two days in February of 2013
- Included 24 experts with backgrounds in one or more of the following areas:
 - Immunization Information Systems (IIS)
 - National policy
 - Electronic Health Record (EHR) systems
- Some EHR experts who were unable to travel participated remotely

Motivations for the Meeting

- Prepare for Stage 3 Meaningful Use regulations
- Communicate effectively with these organizations:
 - Office of the National Coordinator for Health Information Technology (ONC-HIT)
 - Centers for Medicare and Medicaid Services (CMS)
 - HIT Policy and Standards Committees
- Show that the public health community was serious in its commitments to reduce variability.
- Develop consensus recommendations that meet needs of both IIS and EHR communities

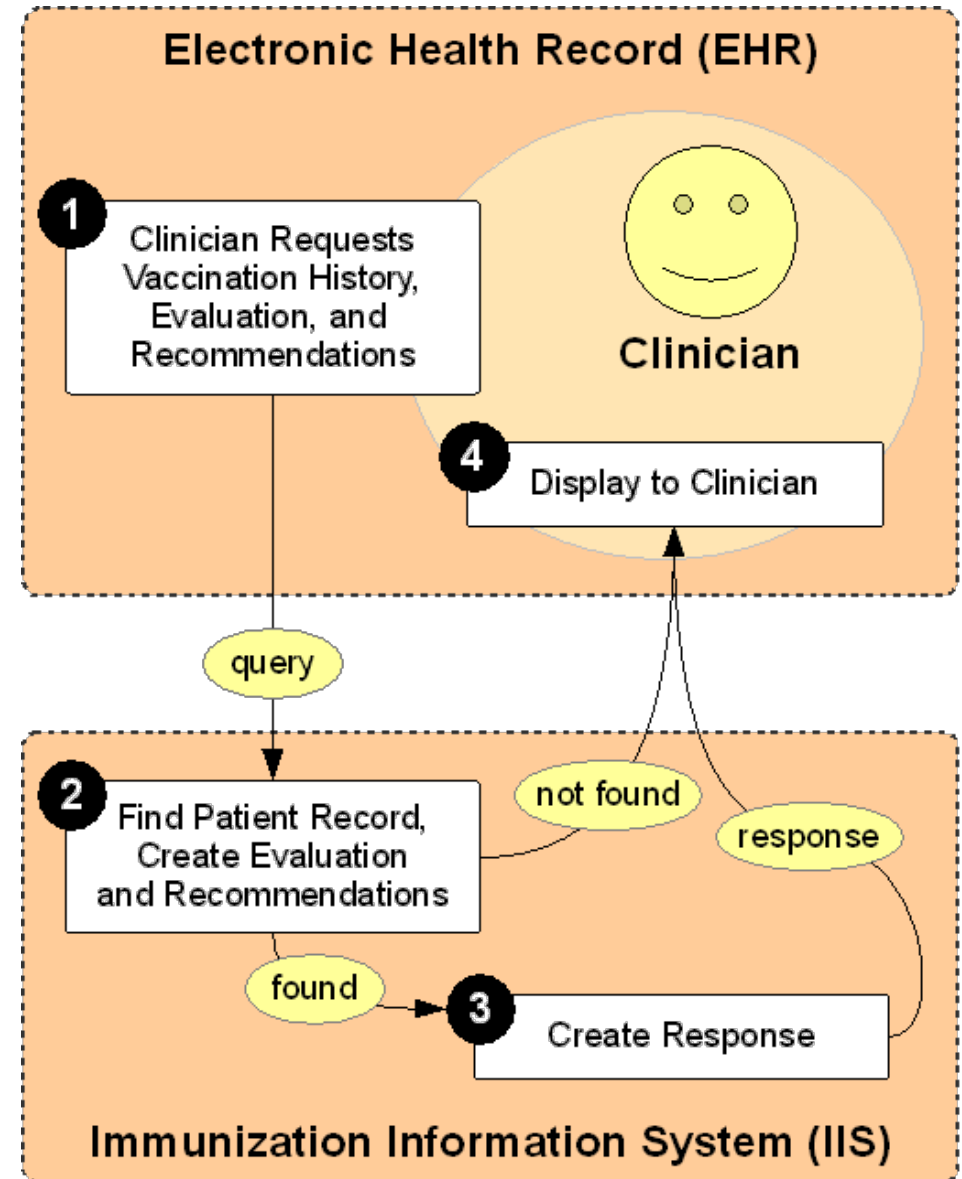
Meeting Process

Pre-Meeting Process

- Phone interviews with each work group member
- Asked what standards were needed to support bidirectional query exchanged
- Reviewed lessons learned from State 1 and Stage 2 Meaningful Use
- Responses, recommendations and observations were collated and organized into four logical focus areas

Primary Use Case

1. Clinician using an EHR requests a vaccination record from the IIS.
2. The IIS finds the patient record, attaches a forecast and evaluation. If the record is not found, the IIS returns a 'not found' message.
3. The IIS creates a response that includes the vaccination history and the recommendations (i.e., immunization clinical decision support, aka vaccine forecast) and sends it back to the EHR.
4. The EHR displays the results to the clinician.



Out of Scope

- Support for EHR reminder/recall activities.
- Quality Reporting or Population Health Management.
- Updates (VXU messages) sent from the IIS back to the EHR.
- EHR connecting directly to a forecast engine to get forecast/recommendations for a patient.

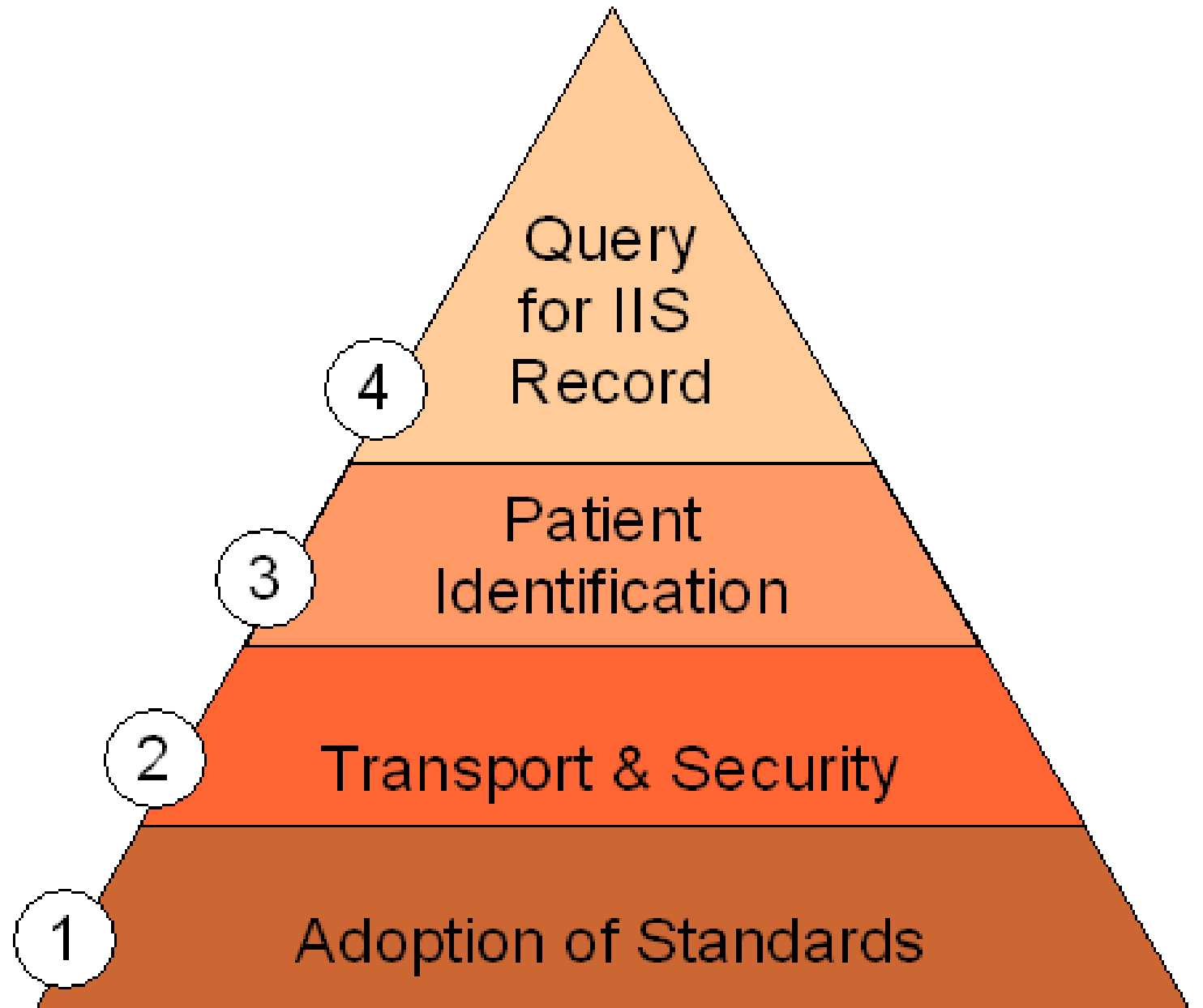
Recommendations

- Work group members were asked to take positions on each identified recommendation
 - **Positive Impact– Recommend:** Required for supporting the primary use case. (This was described to the group as a “thumbs up” or approval of the idea.)
 - **No impact - Permit:** Could be done, will not distract from primary use case, but is not essential. (This was described to the group as taking a neutral position towards the idea.)
 - **Negative impact – Discourage:** Would distract from or harm the primary use case. (This was described as a “thumbs down” or disapproval of the idea in the specific context defined by the small group.)

Limitations of Recommendations

- Represent position of each work group member at the end of the two day discussion
- There was not enough time to come to a group consensus on all recommendations
- Recommendation language was not finalized nor perfected
- At best, results indicate areas of broad agreement and areas that need further discussion
- Each focus area is designed to become the starting point of further discussion and standardization in the community

Focus Areas



Focus Areas

- Adoption of Standards
 - Consistent use of nationally accepted vocabulary and messaging standards, by both IIS and EHR systems.
- Transport & Security
 - Practices and standards around secure interoperability between EHR and IIS systems.
- Patient Identification
 - Processes used to allow EHR to identify the right patient in the IIS.
- Query for IIS Record
 - Standards and format of the patient vaccination record returned by the IIS to the EHR.

Meeting Results

Review of Results

- Much of the harmonization work needed has already been completed
- Benefit and feasibility of bidirectional query exchange is very well established
- There are some areas that need more harmonization to ensure that query exchange can be successfully supported by all IIS and all EHR systems
- The IIS community has been active at the forefront of bidirectional exchange and is well positioned to support the increased use of bidirectional query standards

Recommendations with unanimous or near-unanimous agreement

- A national verification process should be established that provides strong standards and specifically verifies that IIS can connect with certified EHR systems.
- IIS should make available the standard CDC WSDL, and EHR systems should be able to support the standard CDC WSDL.
- IIS should continue to support point-to-point connections with providers.
- Standards for transport/security should be the same for HIE and point-to-point interfaces to IIS.
- When an EHR system queries an IIS, it should use the demographic record that is recorded in the EHR.

Recommendations with unanimous or near-unanimous agreement

- The EHR should send an EHR patient ID with every update to the IIS.
- The IIS should associate EHR patient IDs with patient records.
- The IIS should use the EHR patient ID as a strong query parameter for the site that originally submitted that EHR patient ID.
- A best practice is that clinicians should manually query the IIS in preparation for or during patient encounter.
- The HL7 QBP/RSP standard, as currently defined in the version 2.5.1 implementation guide, is the optimal message format to send back to an EHR system (a printable form or CDA are certainly permitted but less optimal).

Areas that need further discussion

- Adoption of Standards
 - Establishment of a national verification process for verifying an IIS can connect with certified EHR systems
- Transport & Security
 - Harmonization of authentication and identification processes

Areas that need further discussion

- Patient Identification

- Some functional aspects of EHR to IIS query interaction need to be clarified and harmonized
 - Should EHR systems store the IIS patient id when an exact match is made?
 - Should EHR system allow user to accept/reject exact match returned by IIS?
 - Should EHR systems allows users to edit/update/remove an IIS patient id?
 - After receiving a set of possible matches from an IIS, should EHR systems re-query the IIS for the selected exact match using the patient demographics in the EHR or the patient demographics reported by the IIS in the possible set of matches?

Areas that need further discussion

- Query for IIS Record

- Best practice guidance needs to be developed and harmonized on when an EHR should request an immunization record
 - Can or should an EHR query in preparation for a patient appointment?
 - Can or should an EHR query for a large subset of patients?
- Best practice guidance needs to be developed and harmonized on what an EHR should do with the immunization record received
 - Should the EHR display the patient information returned by the IIS?
 - Should the EHR merge the patient information into the IIS?
- Some minor functional aspects of what an IIS is expected to return on the patient and vaccination record need to be harmonized
 - What information is the IIS expected to return or not expected to return?

Thank you!

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Greg Anderson

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Bhawna Btra

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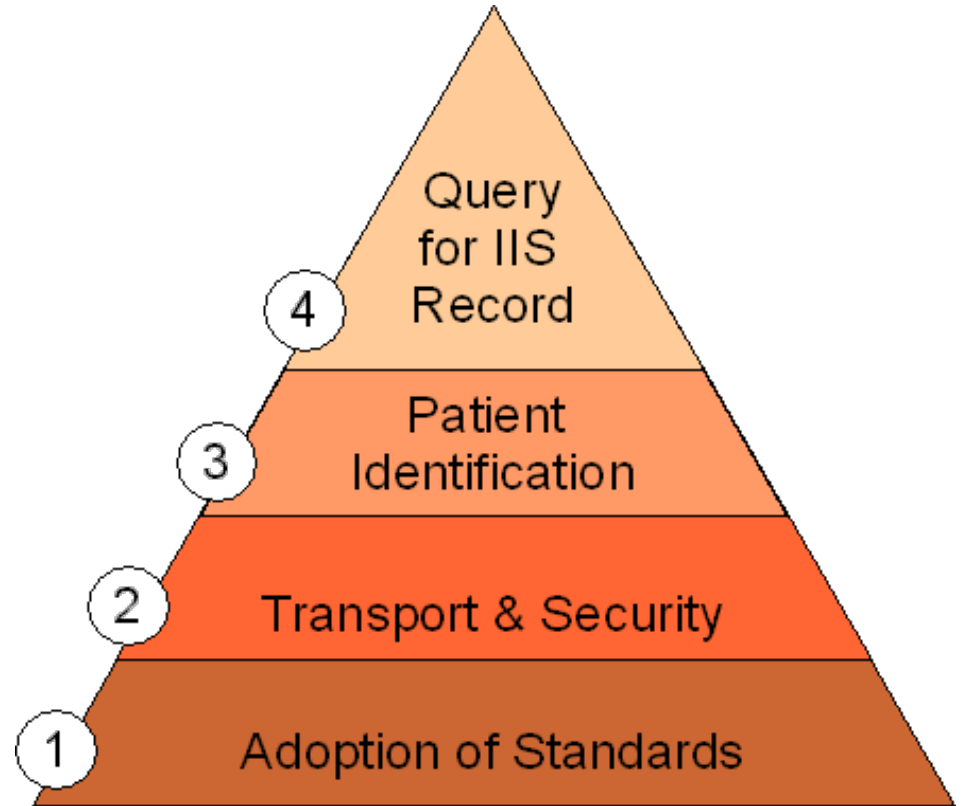
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Meeting Details

Focus Area 1

Adoption of Standards



Background

- Great progress has been made on adopting common standards:
 - IIS community has defined standard for query messages
 - Many EHR systems are being certified as part of ONC's certification process
 - Many EHR systems have unidirectional interfaces with different IIS
 - Bidirectional query exchange is gathering momentum
- There still remains a need for
 - Greater standardization
 - New processes to verify and ensure that IIS and certified EHR systems can interoperate bidirectionally

Constraining Local Implementations

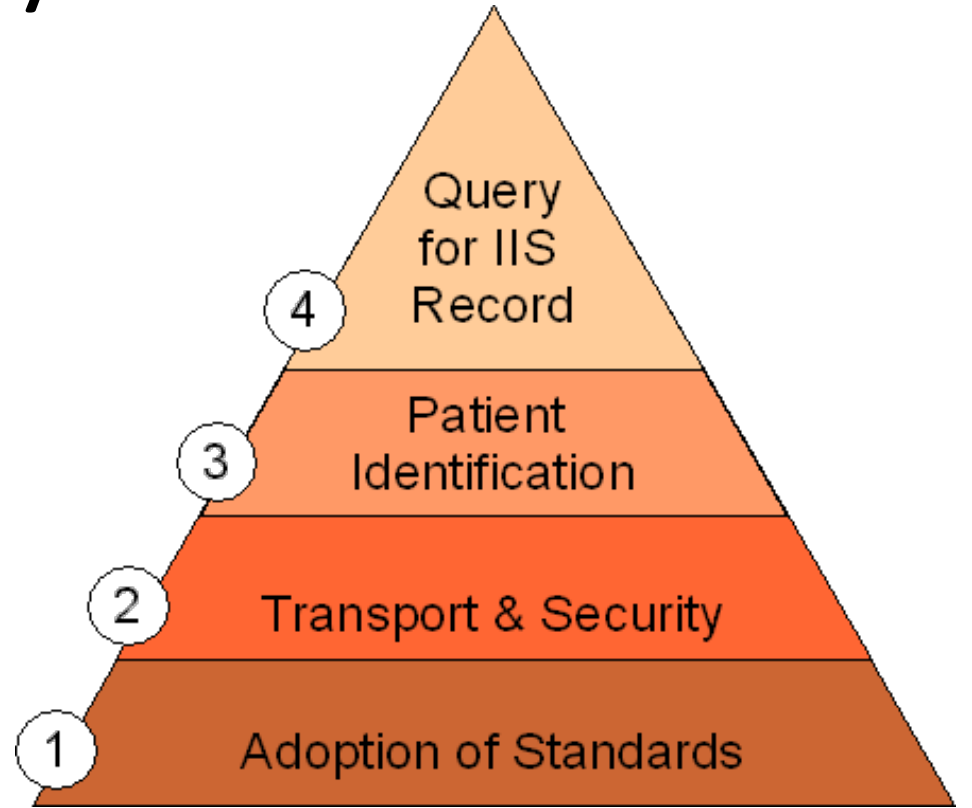
FA1 - Q1. Constraining Local Implementations Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. Keep things as is. IIS implementations should be allowed to add requirements to the CDC Implementation Guide.	2	4	16
2. CDC Implementation Guide should summarize and communicate the requirements from all the US IIS guides. (Everywhere in the document where the phrase 'local rules may apply' would be replaced with specific information about <i>which</i> local rules apply.)	8	7	7
3. IIS implementations should be constrained by the CDC Implementation Guide.	16	2	4

Certification

FA1 - Q2. Certification Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. IIS Interoperability Status Check project should be continued and further standardized to support verifying that IIS interfaces meet national standards.	23	0	0
2. A national verification process should be established that provides strong standards and specifically verifies that IIS can connect with certified EHR systems.	22	1	0
3. An IIS certification process should be established to certify that IIS are ready to integrate with EHR systems.	19	2	2

Focus Area 2

Transport & Security



Background

- Very challenging area for standardization because:
 - The HL7 version 2.x standard specifically avoids defining a particular transport standard.
 - There are various standards proposed for transmission of public health data.
 - Any national standard chosen may or may not align with jurisdictional standards for transport.
 - The IIS community has chosen SOAP web services as a national standard, but adoption by all IIS is not yet complete.
 - Increasingly, IIS are receiving data indirectly through third parties, such as Health Information Exchanges (HIE), so do not directly control or define the transport standard the EHR is required to use.

CDC Transport Standard

FA2 - Q1. CDC Transport Standard Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. IIS should make available the standard CDC WSDL.	22	2	0
2. EHR systems should be able to support the standard CDC WSDL.	23	1	0
3. The IIS community should consider adopting a different transport standard.	0	5	19

Point-to-Point or HIE Connections

FA2 - Q2. Point-to-Point or HIE Connections Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. IIS should support bidirectional connections through HIE or other centralized messaging systems.	14	10	0
2. IIS should continue to support point-to-point connections with providers.	23	2	0
3. Standards for transport/security should be the same for HIE and point-to-point interfaces to IIS.	22	3	0
4. HIE should be held to the same certification standards as EHR systems.	15	6	2

Sender Authentication

FA2 - Q3. Sender Authentication Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. The CDC WSDL standard is well enough defined; no more development is needed.	4	7	11
2. The IIS community should utilize digital certificates for the second factor in two-factor authentication.	7	11	4
3. The IIS community should continue to support and standardize single-factor authentication.	18	5	0

Sender Identification

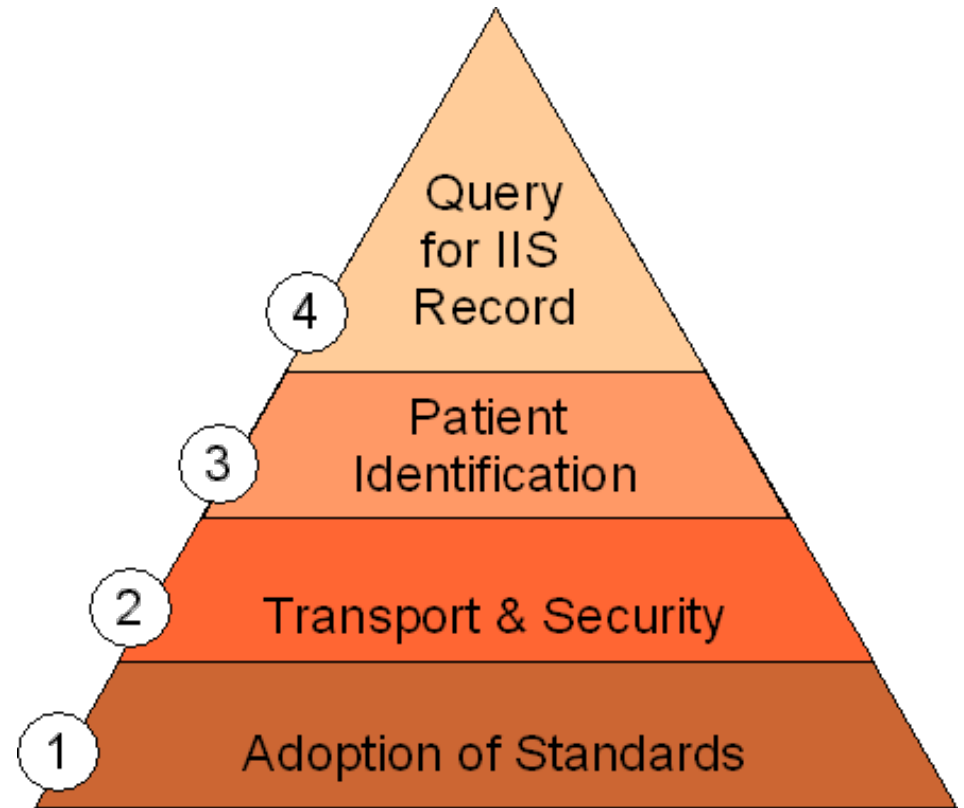
FA2 - Q4. Sender Identification Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. IIS community should decide on one standard for identifying the sending system, the provider organization, and the EHR username, in query messages.	18	5	0
2. Leave current IIS variability as is.	1	3	20

Query Tracking at User Level

FA2 - Q5. Query Tracking at User Level Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. IIS community should decide on one standard for query tracking.	16	6	0
2. IIS should log, for auditing purposes, the EHR username, text reason for query, time of query, and patient returned.	12	10	1
3. EHR should log, for auditing purposes, the EHR username, text reason for query, time of query, and patient returned.	16	7	0

Focus Area 3

Patient Identification



How to Find a Match

- Patient identification can be done three different ways:
 1. The EHR sends the IIS patient ID
 2. The EHR sends the EHR patient ID
 3. The EHR sends the patient's demographic
- Many IIS support all three options, often like this:
 1. If the EHR sends the IIS patient ID, that record is found and returned; if not, continue.
 2. If the EHR sends the EHR patient ID, look to find this patient ID reported by this EHR; if found, return; otherwise, continue.
 3. The patient demographic information is used to perform a query and/or fuzzy-match selection of exact or possible matches.

Matching Options

FA3 - Q1. Matching Options Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. IIS patient ID should be utilized for patient matching.	20	6	0
2. EHR patient ID should be utilized for patient matching.	26	0	0
3. IIS should return an exact match based on the patient demographics when the patient IDs are not recognized.	20	3	2
4. IIS should return possible <u>match(es)</u> based on patient demographics when an exact match is not found. (Where allowed by local IIS policy and regulation.)	20	5	1
5. EHRs should support the return of possible matches by allowing the EHR user to pick the correct match and re-query.	17	9	0

EHR Functionality

FA3 - Q2. EHR Functionality Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. The EHR should be able to store the IIS patient ID as part of the patient record.	19	7	0
2. The EHR should display the IIS patient ID to the user.	6	19	1
3. The EHR should automatically store the IIS patient ID on records when an exact match is returned.	15	11	0

FA3 - Q2. EHR Functionality Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
4. The EHR could provide the clinician with the ability to indicate that an incorrect match was found, and prevent the data from populating the patient's record.	14	10	1
5. The EHR should store the IIS patient ID on the patient record when the user confirms the match.	17	8	1
6. The EHR should allow the user to remove or delete the IIS patient ID from the patient record.	7	13	5
7. The EHR should allow the user to edit, update or add the IIS patient ID to the patient record.	2	10	13
8. When the EHR queries, it should use the demographic record that is has recorded in the EHR.	22	2	0
9. The EHR should send patient demographics when querying by ID.	17	6	0
10. The EHR should send an EHR patient ID with every update to the IIS.	22	1	0

Re-querying for Exact Match

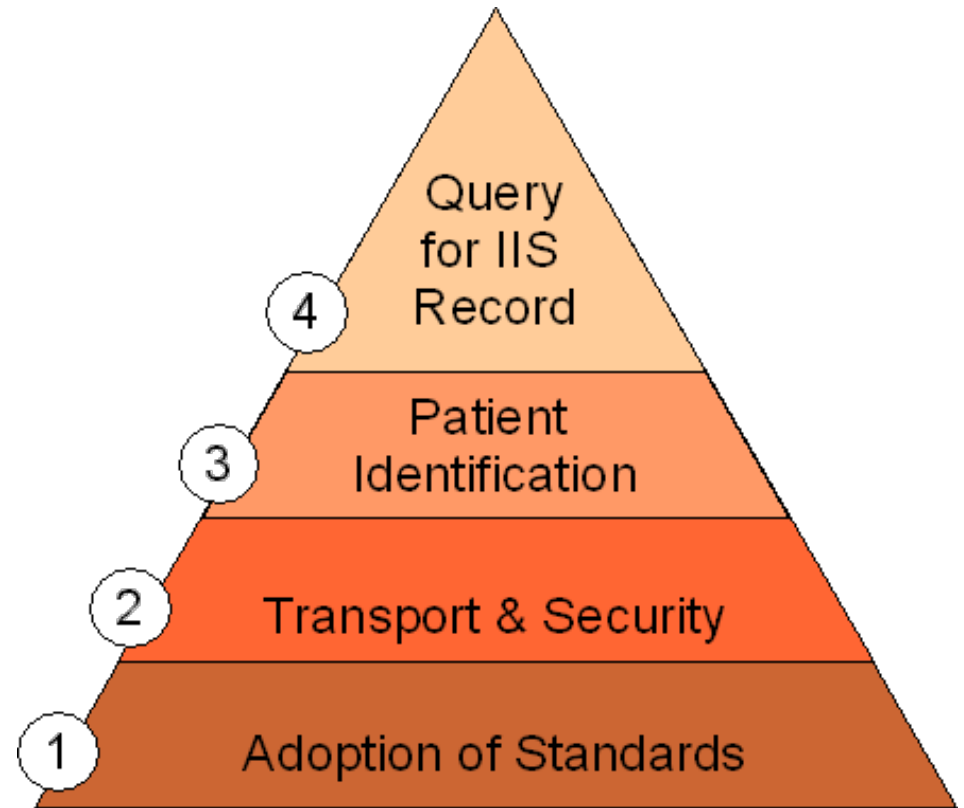
FA3 - Q3. Re-querying for Exact Match Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. When the EHR queries again to get an exact match, it should use the demographic record that is recorded in the EHR.	13	9	2
2. When the EHR queries again to get the exact match, it should use the demographic data for the patient that was sent back from the IIS, and which the user selected.	8	12	3
3. When the EHR re-queries (based on the clinician's selection), the IIS ID should be used in the re-query.	<i>inadvertently left off of survey</i>		

IIS Functionality

FA3 - Q4. IIS Functionality Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. The IIS should associate EHR patient IDs with patient records.	24	0	0
2. The IIS should remember all EHR patient IDs, even if the IIS has two or more EHR patient IDs for the same patient, from the same practice. (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.)	19	5	1
3. The IIS should use the EHR patient ID as a strong query parameter for the site that originally submitted that EHR patient ID.	25	0	0
4. The IIS should not automatically return an exact match based on patient ID alone; other patient demographics should be considered.	19	5	1

Focus Area 4

Query for IIS Record



Background

An emerging and critical aspect of interoperability is what is known as *process interoperability*. This refers to effective use of information and information technology within the context of daily workflows. For bidirectional query and immunization information exchange, this means the EHR system can query an IIS and present the results with little, if any, human action needed. The goal is to have the right information on the right patient available to the clinician when and where needed, to support making the right decision.

Best Practice

FA4 - Q1. Best Practice Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. Clinician manually (attended) queries IIS in preparation for or during patient encounter.	24	0	0
2. EHR automatically queries IIS in preparation for a specific type of visit/patient criteria (criteria will vary by jurisdiction and may change over time).	13	9	2
3. EHR automatically queries IIS when patient is scheduled for any visit.	6	9	9
4. Practice/organization initiates process to query IIS for all patients or a large subset of patients.	3	10	10

Message Format

FA4 - Q2. Message Format Decision Points	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. HL7 v2 RSP.	24	1	0
2. Printable document.	2	17	6
3. Consolidated CDA.	9	13	2

EHR Support for Storing Results

FA4 - Q3. Demographic Data Returned by IIS	Participant Vote Breakdown		
	Recommend	Permit	Discourage
1. IIS should return a complete demographic record.	1	10	10
2. IIS should return a limited demographic record.	16	5	0
3. IIS should return all data originally submitted by querying system.	9	12	0
4. EHR should allow the clinician to see the demographic information returned by the IIS.	11	10	0
5. EHR should merge the demographic information into the patient record.	1	15	6