(QH) Query Health

Challenge

The nation is reaching a critical mass of Electronic Health Records (EHRs) that comply with data and vocabulary standards. The wide deployment of EHRs creates an opportunity to aggregate health care data to provide a broad range of benefits that can contribute towards improved health of individuals and the population as a whole. A standardized clinical information model and a common method for querying data sources are critical to enabling and simplifying data aggregation across widely distributed EHR systems.

There are a number of important uses for distributed queries, including quality measures, disease outbreaks, comparative effectiveness analysis, efficacy of drug treatments and monitoring health trends. These are largely supported today by extracting data from source systems and integrating it into a centralized database where queries and analysis are managed. The Query Health Use Case moves away from the centralizing tendency to "bring the data to the questions" to distributed population queries that "bring questions to the data." Distributed queries provide access to data, for analysis purposes, while maintaining patient privacy and security by keeping protected health information safely behind healthcare organization firewalls. This will reduce the complexity of managing patient consent and authorizations, audit logs and access lists requirements.

The Query Health project will establish requirements for the clinical information model, distributed queries and results expression, with the objective of giving providers, consumers, researchers and others insight into prevention issues, healthcare research and disease outbreaks. Standards and services for distributed population queries will be selected to enable widespread adoption of the clinical information model and query capabilities. Use of these standards and services will result in increased speed and reduced transaction costs for stakeholders to analyze and apply information, ultimately reducing the cost of healthcare and improving the health of citizens.

Scope

The Query Health Initiative aims to identify the standards and services for distributed population health queries to certified EHRs and other patient data sources, such as HIEs, originating in the routine course of patient care. As a result, information requestors will be able to create and securely distribute queries to data sources directly or via optional network data partners, who serve as intermediaries. The information requestors can distribute queries to data sources, or network data partners, who support the distributed queries; however the data sources ultimately retain control over the decision whether to respond to a query as well as maintain control over the data to be released. Network data partners, when used, may examine queries and pass them on to data sources, and may aggregate and modify the data returned, performing such tasks as masking of provider organization, etc. Data sources, such as a provider organizations, will execute the query against a standard clinical information model, securely return the results of the query directly to the requester or via the network data partner. The Initiative will develop models for the technical and financial sustainability as well as best practices for organizations, management and coordination, data use, data sharing; giving consideration to privacy, security and consent requirements. It will also address methods for extensibility of the clinical information model; specifically those data elements, terminologies, and code sets that enable the queries and results expression.

The Initiative will align with and leverage other initiatives of the S&I Framework (e.g. Transitions of Care); EHR certification criteria; Meaningful Use requirements; and other health IT initiatives. The Initiative will evaluate and leverage where possible existing investments, technology and thought leadership in distributed query, implement the specifications through an open source reference implementation, and evaluate these findings through demonstrations and pilots. The evaluation will help refine these standards.

To support the goals and objectives of this Initiative, the Use Case and its requirements will evaluate and address several outcomes, such as the following (to be refined and further validated by the community):

- EHRs and other clincial data sources have the capability to transform and map data (or a view of its data) to a common clinical information model;
- Network data partners and data sources have the ability to participate with selected information requestors and specific queries;
- Requestors will have the ability to create and securely deliver "well formed queries" to selected network data partners and/or data sources; and
- Network data partners are able to examine and to pass the requestor information to the clinical data sources. Such information (depending on the
 functional requirements) may include confirmation of the query; security information of the requestor; and timeliness of the results being sought.

The Use Case scenarios focus on querying against an extensible common information model and returning a final result set. For the purpose of the ONC pilot, the initiative will prioritize and select a few User Stories, based on national priorities and existing research and public health network infrastructure. Additional User Stories, developed by the community, will be analyzed and evaluated to ensure that the architecture framework, standards and services for distributed queries are robust and extensible.

The pilot/reference implementation will be built based on the scenarios described in the Query Health Use Cases. As described in the figure below the reference implementation will involve multiple distributed EHRs being queried, with the return of aggregated results to the requestor.

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The pilot/reference implementation may also include establishing requirements for an Intermediary to review the query, review the results, edit/blur the results, and to pre-aggregate across organizations depending on the requester and query. The pilot/reference Implementation sites will be selected based on national priorities and existing research and health information management infrastructure.