NHIN Trial Implementations
Use Case Requirements Document

Use Case Title: Quality Detailed Use Case – Scenarios 1& 2, Flow #1

Workgroup: Population Perspective Workgroup

Version: V.2

Description:

- Generally describe the Workgroup's understanding and assumptions in analyzing the use case priority information exchanges.

  The Quality Use Case subcommittee of the Population Perspective WG proceeds with an understanding based upon current analysis that Priority Flows #1, #4, and #9 of Scenarios 1 and 2 of the Quality Use Case may be considered functionally equivalent. This assumption seems to be supported by review of data, events, actions, conditions, and gaps, etc. for both hospital-based (Scenario 1) and clinician-based (Scenario 2) quality information collection and reporting; however, it may not be possible to realize the full implications of this assumption until requirements are driven to specifications and implementation processes, particularly with standards for a number of priority exchanges undefined.

  Quality reporting requirements are defined based on the measure set(s) used by entities that require quality performance reporting – e.g. CMS, Joint Commission, State surveillance, payors, internal tracking/monitoring – and other clinician/system-defined needs. Two primary yet divergent uses of quality measures are for patient care and reporting. At the patient-level, quality measures can serve as a point-of-care reminder for clinical care due (or received) by patients who are eligible for the specified care. Summarized or aggregated quality measures are reported at the clinician, hospital, site, or system level as required by accrediting, government, pay-for-performance, and other entities. As per HITSP, patient-level quality data analysis and aggregation may occur at one or more of the local care delivery locations, at an intermediate site (such as an HIE, HISP, or quality organization), or at the location of the intended recipient of patient-level quality data.

  Assumptions:

  - Patient, clinician, facility identification is standardized throughout the system
  - Information shared among facilities and clinicians in medical practice area is at the patient level to assure appropriate record linkage for patient at point of care
  - Information shared outside the actual provision of care is patient de-identified and 'rolled up' to the required level for reporting out.
  - Feedback to clinician includes all measures for which patient is eligible, due date, and latest result, if applicable
  - Prompts for new patients if eligible for (at least) preventive services – i.e., prompts care even though not able to be fully included in some reportable quality measures
  - It is unlikely that real-time feedback to clinician will occur in time for the demonstration, but at some point in the future this feedback will include all measures for which patient is eligible, due date, and latest result, if applicable.

- Include general interpretations that the Workgroup made to support the priority information exchanges between HIEs and between an HIE and other actors in the exchange. See above

Priority Information Exchanges:

- List the use case priority information exchanges identified by ONC.

Quality Use Case Priority Information Exchanges
(http://www.hhs.gov/healthit/documents/UseCaseQuality.pdf)

Page 12, Scenario 1 Hospital-based Care Quality Information Collection and Reporting
ONC seems to have prioritized capturing data from within a hospitalization over adding data from the HIE or payors.

Priority Info. Exchanges	Use Case Description	Notes/Comments
Information Exchange #1	Defined quality measurement specifications to be reported are sent to hospitals.	The standards for representing measures and the “curly braces” problem make any electronic transfer of “quality measurement specifications” unrealistic challenging. A reasonable goal might be to distribute these standards in text format but with metadata. Probably more amenable to a publication model than a push model. The Collaborative for Performance Measure Integration proposal for executable quality metrics is an important option to considerThe SPIN query structures seem closest to providing the full functionality. CDISC/BRIDG may also be options
Information Exchange #4	Hospital quality data is sent either via an intermediate entity or point-to-point for onward transmission to the Multi-Hospital Measurement and Reporting entity (patient-level – identifiable).	Basically, this requires transfer of a patient specific summary coded using standardized codes and represented in a standardized format like a CDA.
Information Exchange #9	Distributed data is available to users (aggregate hospital-level data).	A number of issues arise such as level of aggregation (provider, hospital facility, hospital group, health system), presumably the information will be de-identified (at least with respect to patient). Standards for distributing these types of data are fairly generic though CDISC may offer some options in its clinical trials results reporting approach. The QRDA effort is another potential opportunity. They plan to have a draft for trial use available in September of 2008 which may be too late for this work. Another concern with the QRDA would be the “overhead” created by using XML. Consider the file size for 1 million patients (versus transferring data for a

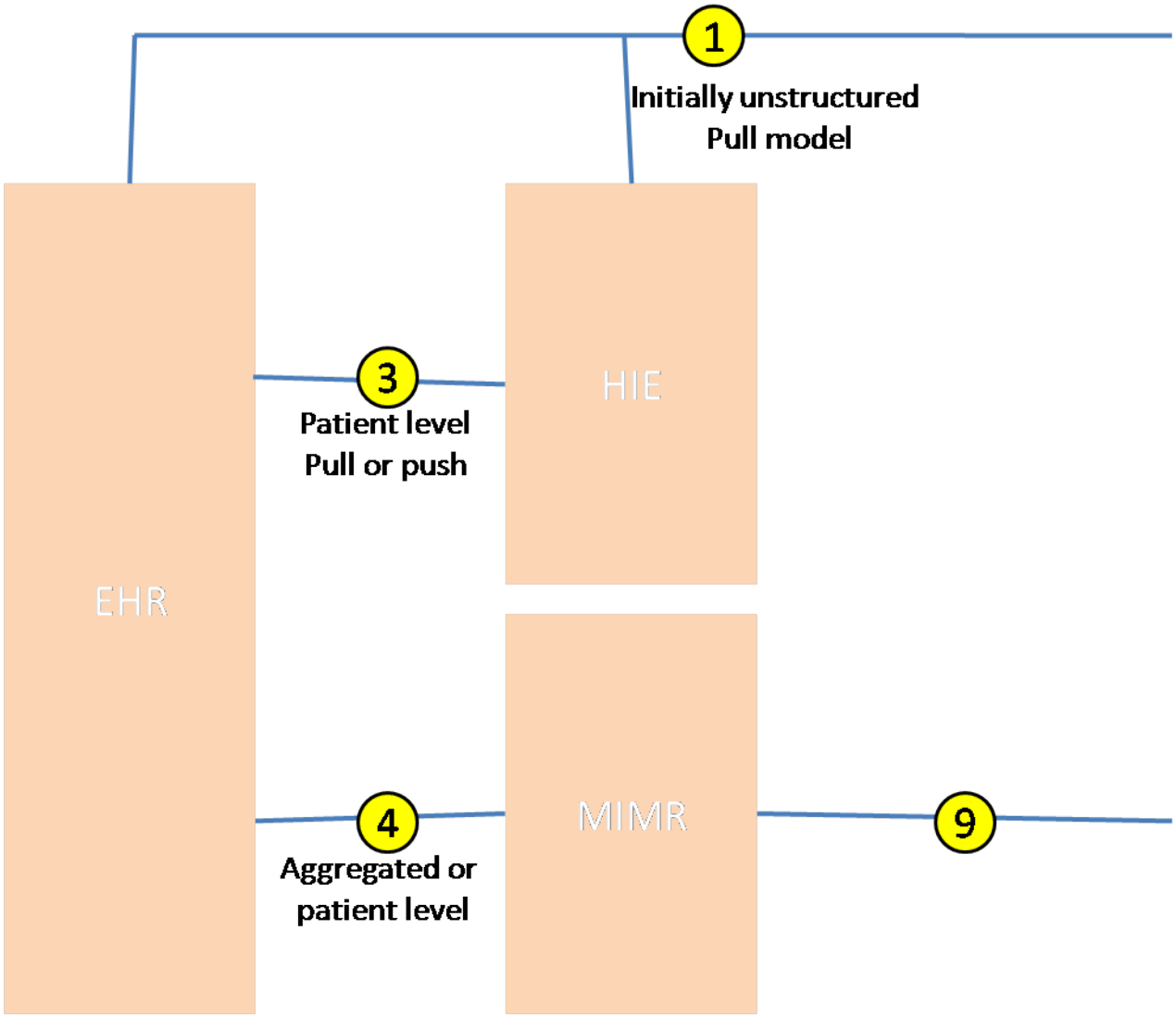
		single patient at a time).

Page 21, Scenario 2 Clinician Quality Information Collection and Reporting

In this use case, ONC prioritized incorporating data from the HIE into the quality information collection and reporting process. Given that the processes are essentially identical in terms fo information flows, only the clinician (ambulatory) scenario should be implemented.

Priority Info. Exchanges	Use Case Description	Notes/Comments
Information Exchange #1	Defined quality measurement specifications to be reported are sent to clinicians.	Same as for hospital case
Information Exchange #3	Longitudinal health information held in associated repositories is forwarded by the HIE (patient-level – identifiable).	Could be pushed or pulled as a CDA but this step may not be necessary if the clinician's data are part of the HIE. In any case requires structured data not just documents.
Information Exchange #4	Clinician quality data is sent either via an intermediate entity or point-to-point for onward transmission to the Multi-entity Feedback and Reporting entity (patient-level – identifiable).	Same as for hospital case #4
Information Exchange #9	Distributed data is available to users (aggregate clinician-level data).	Same as hospital case #9

- Provide a diagram illustrating the priority information exchanges (i.e. either extracted from the use case or one created by the Workgroup).


1
Initially unstructured
Pull model
EHR
3
Patient level
Pull or push
HIE
4
Aggregated or
patient level
MIMR
9

Requirements:

INSTRUCTIONAL NOTE: Define requirements for each use case priority information exchange as identified above.

Use Case Scenario: Clinician / Hospital-based Quality Information Collection and Reporting

Information Exchange: 1.Defined quality measurement specifications to be reported are sent to clinicians / hospitals

1 Information Exchange Workflow

1.1 Workflow Steps and Description

[Describe the workflow steps in the identified use case information exchanges, including the functional capabilities of the exchanges and the actors involved.]

There is a significant component to the quality information collection and reporting workflow which occurs outside of patient care workflows.

Clinician / Hospital Perspective

1. Agrees (or required) to participate in quality information collection and reporting process
2. Makes necessary changes (if any) to systems in practice to facilitate data collection
3. Cares for patient
4. Receives or views physician/hospital level report of agreed to measures which may include individual patient level data as well
5. Evaluates data collection processes in light of data and provides an additional data or creates improved processes for data collection
6. Evaluates care processes in light of data
7. Modifies care processes based on data
8. Monitors care processes with ongoing data

HIE perspective

1. Responds to queries from clinician/hospital systems with or pushes based on a trigger coded and structured longitudinal patient data (related to quality measures specifications)
2. Receive individual patient level data from clinicians related to quality measures – e.g., eligible for service (in denominator) and had/need service (numerator)(not in a structure of flow unique to quality information collection and reporting but in a format that facilitates other cooperative processes such as public health reporting as well). This could be in the form of HL7 V2 message or CDA.
3. Implement queries required for quality information reporting based on the measures

4. Deliver individual patient level information to MEMR organization for aggregation and reporting.
5. Attribute patients to providers
6. Format data per reporting requirements
7. Functional Capabilities:

MEMP Organization

1. Establish measures – ideally align across all information recipients; more realistic – have some measures with differing specifications necessitating multiple calculations for same measure
2. Distribute/publish measures
3. Accept individual patient level information from HIE
4. Accept provider attribution from HIE
5. Aggregate data by appropriate unit and create reports

Defined quality measurement specifications to be reported are sent to clinicians / hospitals.

There options for representing quality measurement specifications are very early in evolution and will require significant effort to implement. Further, there are no sources of measures that are creating them in these formats today. Given this stage of development, our initial implementation will rely on paper delivery of measurement specifications which will require manual translation into the appropriate systems.

Looking forward we would expect to migrate to structured measure representations. Clinician system may retrieve individual measures from a central quality measure management facility (local, regional, national, EHR vender, Health Plan, quality organization, etc.) or receive them via “push” from the requesting system.

Reconciliation across required reporting entities is necessary to determine if all specifications for the same measure are identical. If not, clinician/hospital need to decide which measure specifications will serve all purposes. If this is not possible then it will need to calculate the same measure in several ways to meet reporting requirements. Clinician/hospital will need to assure that the multi-entity feedback and reporting entity has capability to aggregate and report back to information recipients in required formats.

Standardized technical specifications for these defined quality measures are incorporated into the EHR, in order to automate data capture and reporting of quality measurement data where possible. However, (quality data/report) requesting systems cannot know the capabilities of provider reporting systems, so provider systems must request the appropriate type/version of measure specification. In general, measure specifications (definitions, numerator, denominator, algorithm, etc. for calculation of the measure) are provided in as much detail as possible. Quality measures in an executable XML format (such as that of the Draft Reference Guide for EHR Vendors from the Collaborative for Performance Measure Integration with EHR Systems) will have the greatest interoperability and produce results with the greatest cross-system and cross-implementation validity, and should be most prized by EHR systems with the capabilities to utilize them.

1.2 Use Case References (e.g. Events/Actions)

[Cite applicable references to the use case (e.g. assumptions, events, actions, etc.) as well as the rationale to justify interpretations of the use case priority information exchanges.]

7.1.1 Event: Receive listing of defined measures and abstraction guidelines

7.1.1.1 Action: Clinician organizations/ hospitals receive the listing of quality measures and detailed measure specifications for how a quality measure will be calculated.

7.1.1.2 Action: Clinician organizations identify the measures which apply to their patient population

Assumptions

- Measures are clearly defined
- Abstraction guidelines are unambiguous
- Multiple entities that require/request quality measures do not have differing measurement specifications

1.3 Key Assumptions

[Provide key assumptions the Workgroup used in interpreting the priority information exchanges, as well as the rationale.]

1. Interoperability Requirements of HITSP/IS06 Table 2.2.1-1 Action 7.1.1.1
2. The “aggregator” may be part of the EMR or other system operated by the healthcare delivery organization (HITSP/IS06 Table 2.2.2-1 Action 7.111). Accordingly, functional requirements and information flows will accommodate calculated measure reporting (aggregate analytic results) from EHR.
3. Quality performance measures have a unique referencing schema and a protocol for unambiguous versioning.
4. Repositories exist for download of structured quality performance measures, held in update-compliance with storage archives of measure development organizations (NCQA and AMA-PCPI).
5. At least three types or levels of structured quality performance measure specification exist:
    a. Fully structured “executable” quality measure specification in XML “import” format per the Draft Reference Guide for EHR Vendors from the Collaborative for Performance Measure Integration with EHR Systems (10/16/2007).
    b. CDA-R2 structured specification of quality performance measure for aggregate analytic reporting (calculated measure result) from EHRs. May include coded data values, definitions, narrative explanations, dates, and detailed logic expressions, etc., but actual implementation of measure query and/or report is presumed to be a partially manual process in target system utilizing transmission of this structured document information and data.
    c. CDA-R2 structured specification for reporting patient-level quality information from EHRs to external mutli-entity measurement and reporting facilities.

2 Information Exchange Requirements

2.1 Triggers

[The applicable user and system-driven activities that initiate the information exchange. For example, this could describe how a particular query and retrieval, routing of information, etc. are initiated.]

Quality reporting is inherently time driven in nature. While data can be continuously updated, aggregation is necessary to interpret the data. Monthly or even quarterly updates are likely sufficient given the rate of change of the currently available measures.

- Clinician organization / hospital requires participation in quality program
- Government requires program providers (Medicare, Medicaid) to report specific quality measures
- State surveillance requires reporting

2.2 Data Content Requirements

[The type of data needed in the exchange and when that data should conform to a specification, and (if available) identified gaps in existing NHIN or HITSP specifications that need to be addressed for the information exchange.]

General

The data required for the quality use case is entirely driven by the measures adopted but even a "simple" measure like mammographic screening requires several dozen data elements.

Measure Lists

Measure lists will presumably need to include information about what measures, meta-data about the clinicians they may be applicable to, the source of the measures, the versions, etc. There is obvious choice for providing this metadata. The AHRQ funded CDSS Consortium lead by Partner's Healthcare is developing similar specifications for guidelines/CDS logic which may be informative.

Measures

The measures themselves will need to migrate from textual descriptions to standardized representations. This will include incorporation of codes (NCQA has made nice progress in this regard for example) and logic. The Draft Reference Guide for EHR Vendors from the Collaborative for Performance Measure Integration with EHR Systems provides an example of what will be needed. Other examples that can be drawn on include the NCI's SPIN project which has developed a cross institutional approach to queries expressed in XML and the CDISC/BRIDGE effort which addresses the criteria for clinical trials.

Longitudinal Patient Data

Longitudinal patient data driven by the measures will need to be pushed by or pulled from the HIE.

Coding Reasons for Exclusions
Unfortunately there are few guiding standards regarding performance measure exclusion criteria and their coding. The CMS PQRI P4P program utilizes four CPT Level II Modifiers as performance measure exclusion categories. After the code for the quality measure, billers may append a 1P, 2P, 3P, or 8P to

indicate a denominator exclusion from the performance measure. Modifier 1P indicates performance measure exclusion due to “medical reasons”; modifier 2P indicates measure exclusion due to “patient reasons”; modifier 3P indicates measure exclusion due to “system reasons” (health care delivery system); and modifier 8P indicates measure exclusion due to “reason not otherwise specified.” These exclusion categories should probably be coded in LOINC but also need more granularity. HITSP/ISO6 recognizes denominator and numerator data exclusion categories appropriate for data encoding and automated processing, but likely not for data capture from providers. HITSP suggests further analysis is needed, including work with HITEP to establish definitions and a terminology/taxonomy of quality measure exclusions. Some suggested quality performance measure exclusion categories for provider assessment follow for inclusion in a coded medical terminology.

Example taxonomy of performance measure exclusion rationale and reasons:

<exclusion from quality performance measure population> {default NOS category}
- <exclusion due to medical reason>
  - <not medically indicated>
    - <absence of organ>
    - <absence of limb>
    - <already received>
    - <already performed>
  - <medically contraindicated>
    - <allergic history>
    - <potential ADI/E>
  - <risks outweigh benefits>
  - <medical diagnosis>
  - <medical problem or condition>
  - <use of pharmacotherapy>
  - <use of non-pharmacologic medical therapy>
  - <order for medication>
  - <order for non-drug treatment>
- <exclusion due to patient reasons>
  - <patient declined care>
  - <patient declined monitoring>
  - <patient declined service>
  - <economic hardship>
  - <religious reason>
  - <moral or principled reason>
  - <family or clan reason>
  - <social reason>
- <exclusion due to healthcare delivery system reason>
  - <resource not available>
    - <equipment not available>
    - <location, room, or space not available>
    - <supplies not available>
    - <personnel not available>
  - <service not available>
    - <expertise not available>
  - <payer-related limitation or determination>

Measurement Result Reporting

A variety of coding and representation issues will need to be addressed in measure reporting including identifiers for providers (assume NPI should work in many cases) and practice as well as other aggregation levels. Payor source and other categorizations will likely require standardization (eg reporting performance for commercially insured versus Medicaid beneficiaries). Meta-data about methodologies such as adjustments made for socioeconomic variations and adjustments that have been applied will be necessary.

2.3 Other unique requirements

[Identify the functionality or interoperability capabilities that will be needed to support the information exchange.]