Healthcare Information Exchange

From Here To Eternity

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v.2

Agenda

- **Reflecting on the HIE implications of Meaningful Use Stage 3**
- **Gaps in HIE Standards**
- **Lessons learned from HIE efforts to date**
- **Patient Centered HIE**
- **Thoughts about Privacy and Security in the context of HIE**

Use of CDS to Improve Quality of Care and Safety

- Core: EP/EH/CAH use of multiple CDS interventions that apply to CQMs in at least 4 of the 6 NQS priorities
- Recommended intervention areas:
  1. Preventive care
  2. Chronic condition management
  3. Appropriateness of lab/rad orders
  4. Advanced medication-related decision support
  5. Improving problem, meds, allergy lists
  6. Drug-drug /drug-allergy interaction checks

Certification criteria:

1. Ability to track "actionable" (i.e., suggested action is embedded in the alert) CDS interventions and user actions in response to interventions
2. Perform age-appropriate maximum daily dose weight based calculation

Provider Use Effort	Standards Maturity	Development Effort
High	***Low***	***High*** *Nature of tracking a response is a substantive effort. Suggest aligning payment reform with an outcome, rather than prescriptive CDS*

Tracking Orders to Improve Quality of Care and Safety

- **NEW** Menu: EPs
- Assist with follow-up on orders to improve management of results
- Results of specialty consult requests are returned to the ordering provider [pertains to specialists]
- **Threshold:** Low
- Certification criteria
  - EHR should display the abnormal flag for test results if it is indicated in the lab-result message
  - Data complete
  - Notify when available or not completed
  - Match results with the order to accurately result each order or detect when not completed
  - Record date and time results reviewed and by whom

Provider Use Effort	Standards Maturity	Development Effort
Medium	***Low***	***High*** *There are a variety of different concepts with varying levels of difficulty included. Suggest including display of abnormal lab results and sign-off*

Patient Information Captured and Used to Reduce Health Disparities

- **Certification criteria to achieve goals**
  - Ability to capture patient-preferred method of communication
  - Ability to capture occupation and industry codes
  - Ability to capture sexual orientation, gender identity
  - Ability to capture disability status
- **Communication preferences** will be applied to visit summary, reminders, and patient education

Provider Use Effort	Standards Maturity	Development Effort
Medium *Many questions to ask of the patient. Appropriateness for care team members?*	***Low*** *Standards are still evolving for some of these items, although occupation and industry codes have high standards maturity*	***Medium*** *Could potentially be **HIGH**. There are significant workflow changes that could result due to the communication preferences. Patients could provide a default means of communication, without limiting to only that form of communication.*

Recording Advance Directives to Improve Quality of Care and Safety

- **Core for EHs,** introduce as **Menu for EPs**
- Record whether a patient 65 years old or older has an advance directive
- **Threshold:** Medium
- **Certification Criteria:** ability to store the document in the record and/or include more information about the document (e.g., link to document or instructions regarding where to find the document or where to find more information about it).

Provider Use Effort	Standards Maturity	Development Effort
Low	***High*** *Maturity is high if the intent is a simple yes/no check box and link to a URL.*	***Low*** *Development is low if this is a yes/no check box and link to a URL.*

Use of Electronic Progress Notes to Improve Quality of Care and Safety

- **Core:** EPs record an electronic progress note, authored by the Eligible Professional.
- Electronic progress notes (excluding the discharge summary) should be authored by an authorized provider of the EH or CAH **(Core)**
  - Notes must be text-searchable
- **Threshold:** High

Provider Use Effort	Standards Maturity	Development Effort
Medium	***Medium*** *Concerned about the significant threshold increase. Is the intent to provide the ability to search across multiple notes?*	***High*** *Creating de novo functionality and export capabilities* *Discharge Summary is an ambiguous term. Assume meant "Hospital Course" and "Discharge Instructions" and intends that such text notes be included in the Discharge Summary C-CDA Template or equivalent standard?*

Hospital Lab Results Shared to Improve Quality of Care and Safety

- Eligible Hospitals and CAHs provide electronic structured lab results using **LOINC** to ordering providers.
- **Threshold:** Low

Provider Use Effort	Standards Maturity	Development Effort
Low	***High***	***High*** *Concerned about LOINC readiness. Development could be substantial.*

Recording FDA UDI to Improve Quality of Care and Safety

- **NEW**
- **Menu:** EPs and EHs should record the FDA **Unique Device Identifier** (UDI) when patients have devices implanted; for each newly implanted device.
- **Threshold:** High

Provider Use Effort	Standards Maturity	Development Effort
Low	***Low***	***Low*** *Development is low if only a text field, but this provides low utility. Development effort would be much higher if validation is required. This would allow the ability to identify whether a device has been recalled, but would be much harder.*

Access to Health Information to Engage Patients and Families in their Care

- EPs, EHs, and CAHs provide patients with the ability to view online, download, and transmit (VDT) their health information **within 24 hours** if generated during the course of a visit.
- **Threshold for availability:** High
- **Threshold for use:** Low
  - Labs or other types of information not generated within the course of the visit available to patients within four (4) business days of availability
- **Add family history to data available through VDT**

Provider Use Effort	Standards Maturity	Development Effort
High	***Low*** *Low maturity if need structured family history. The wording is different from Stage 2; was this intended?*	***Medium*** *Significant operational issues. Concerned about timing to make this available to the patient. Workflow and attestation implications, but certification itself is not difficult.*

Use of PGHD to Engage Patients and Families in their Care

- **New**
- **Menu:** EPs, EHs, and CAHs receive provider-requested, electronically submitted, patient-generated health data (PGHD) through either **(at the discretion of the provider)**
  - Structured or semi-structured questionnaires (e.g., screening questionnaires, medication adherence surveys, intake forms, risk assessment, functional status)
  - Or secure messaging
- **Threshold:** Low

Provider Use Effort	Standards Maturity	Development Effort
High	***Low***	***High*** *Developers have to incorporate functionality for both strategies which can be configurable by the provider and could require substantial development*

Functionality Needed to Achieve Goals - 1

- **No change in objective**
- **Core:** EPs
- Patients use secure electronic messaging to communicate with EPs on clinical matters
- **Threshold:** Low (e.g., 5% of patients send messages)
- Certification Criteria:
  - **Capability to indicate whether the patient is expecting a response to a message they initiate**
  - **Capability to track the response to a patient-generated message** (e.g., no response, secure message reply, telephone reply)

Provider Use Effort	Standards Maturity	Development Effort
Medium	***Low***	***High*** *The industry already has implemented workflow solutions to ensure closing the loop on communications, and HHS prescribing the workflow is inappropriate. Encourage the concept, but discourage the specificity.*

Visit summaries used to Engage Patients and Families in their Care

- **Core:** EPs provide office visit summaries to patients or patient-authorized representatives with **relevant actionable information**, and **instructions pertaining to the visit** in the form/media preferred by the patient
- **Threshold:** Medium
- Certification Criteria: EHRs **allow provider organizations to configure the summary reports to provide relevant, actionable information related to a visit**

Provider Use Effort	Standards Maturity	Development Effort
Medium	***Low*** *Uncertain how to define usability or relevant and actionable with a standard. Should not mandate usability. How is usability measured?*	***High*** *This is impossible to certify. Suggest providing patient access through VDT, rather than form/media preferred by the patient.*

Functionality Needed to Achieve Goals - 2

- Continue educational material objective from Stage 2 for EPs, EHs, and CAHs
  - **Threshold:** Low
- Additionally EPs, EHs, and CAHs use CEHRT capability to provide patient-specific educational material in non-English speaking patient's preferred language, if material is publicly available, using preferred media (e.g., online, printout from CEHRT)
  - **Threshold:** Low
- Certification Criteria: EHRs have capability to provide patient-specific educational materials in at least one non-English language

Provider Use Effort	Standards Maturity	Development Effort
Medium	***Medium*** *Medium if using infobutton and language. Unsure how useful this objective is.*	***Medium/High*** *Medium/High depending upon the number of languages supported and the nature of the materials available.*

A Summary of Care is Provided at Transitions to Improve Care Coordination

- EP/EH/CAH provide a summary of care record during transitions of care
- **Threshold:** No change
- Types of transitions
  - Transfers of care from one site of care to another (e.g., Hospital to: PCP, Hospital, SNF, HHA, home; etc.)
  - Consult (referral) request (e.g., PCP to Specialist; PCP, SNF to ED; etc.) **[pertains to EPs only]**
  - Consult result note (e.g., consult, ED, etc.)
- Summary of care may (at the discretion of the provider organization) include, as relevant
  - A narrative (synopsis, expectations, results of a consult} **[required for all transitions]**
  - Overarching patient goals and/or problem-specific goals
  - Patient instructions (interventions for care)
  - Information about known care team members

Discussion: Although structured data is helpful, use of free text in the summary of care document is acceptable. When structured fields are used, they should be based on standards. Summary of care documents contain data relevant to the purpose of the transition (i.e., not all fields need to be completed for each purpose).

Provider Use Effort	Standards Maturity	Development Effort
High	***Medium*** *Standards are available but not yet widely in production*	***Medium/High*** *Medium if incorporating into C-CDA from existing workflow* *High due to uncertainty around time requirement which could potentially entail novel data needs*

Notification of Significant Healthcare Events are Sent to Improve Care Coordination

- **New**
- **Menu:** **EHs and CAHs** send electronic notifications of significant healthcare events within four (4) hours to known members of the patient's care team (e.g., the primary care provider, referring provider, or care coordinator) with the patient's consent if required
- Significant events include
  - Arrival at an Emergency Department (ED)
  - Admission to a hospital
  - Discharge from an ED or Hospital
  - Death
- **Threshold:** Low

Provider Use Effort	Standards Maturity	Development Effort
High	***Low*** *HL7 events are mature, but capture of recipient Direct address and transmission/ incorporation of HL7 via Direct is low maturity*	***High*** *New concept. High development effort to capture Direct addresses at registration and then deliver to those addresses.*

Functionality Needed to Achieve Goals - 3

- **No Change**
- **Core:** **EPs, EHs, and CAHs** who receive patients from another setting of care perform medication reconciliation
- **Threshold:** No Change

Provider Use Effort	Standards Maturity	Development Effort
High	***High*** *Already included in Stage 2. In practice the ubiquity of medication information sent in the C-CDA by trading partners is immature.*	***Low*** *Already included in Stage 2*

Use of Immunization History to Improve Population and Public Health

- **Core:** **EPs, EHs, and CAHs** receive a patient's immunization history supplied by an immunization information system, allowing healthcare professionals to use structured historical immunization information in the clinical workflow
- **Threshold:** Low, a simple use case
- **Certification Criteria**:
  - Ability to receive and present a standard set of structured, externally-generated immunization history and capture the act and date of review within the EP/EH/CAH practice
  - Ability to receive results of external CDS pertaining to a patient's immunization

Provider Use Effort	Standards Maturity	Development Effort
Medium	***Low*** *Gating factor is lack of specificity in transport ("push") and query/ response ("pull") from public health agencies* *HealtheDecisions maturity is low*	***High*** *Novel workflows that do not exist outside of a few pilots.*

Transmit Data to Registry to Improve Population and Public Health

- **Menu: EPs, EHs, CAHs**
- Purpose: Electronically transmit data from CEHRT in standardized form (e.g., data elements, structure and transport mechanisms) to **one** registry.
- Reporting should use one of the following mechanisms;
  1. Upload information from EHR to registry using standards
  2. Leverage local or national networks using federated query technologies

Discussion: CEHRT is capable (certification criteria only) of allowing end-user to configure which data will be sent to the registries. Registries are important to population management, but there are concerns that this objective will be difficult to implement.

Provider Use Effort	Standards Maturity	Development Effort
High	***Low*** *No way to enumerate a finite number of standards for the many registries out there. No universal mechanism of delivery. No content standard available.*	***High*** *Recommend signaling that registries should use Direct transport and controlled vocabularies for common form of content.*

Submit Electronic Laboratory Results to Improve Population and Public Health

- **No Change**
- **Core:** **EHs and CAHs** submit electronic reportable laboratory results for the entire reporting period to public health agencies, except where prohibited, and in accordance with applicable law and practice

Provider Use Effort	Standards Maturity	Development Effort
Low	***High*** *Already exists in Stage 2.* *Implementation is difficult. Important for public health departments to use Direct; would make transactions easier.*	***Low*** *Already exists in Stage 2.*

Submit Syndromic Surveillance Data to Improve Population and Public Health

- **EH and CAH only**
- **Core:** **EHs and CAHs** submit electronic syndromic surveillance data for the entire reporting period from CEHRT to public health agencies, except where prohibited, and in accordance with applicable law and practice

Provider Use Effort	Standards Maturity	Development Effort
Medium	***High***	***Low***

Gaps in HIE Standards

- **Provider Directories**
- **Gaps in HIE Standards**
- **Lessons learned from HIE efforts to date**
- **Patient Centered HIE**
- **Thoughts about Privacy and Security in the context of HIE**

Lessons Learned from HIE Efforts to Date

- **Health information exchange is beginning to take off across the country**
  - Driven by bottom-up demand: MU, value-based purchasing, standards of care, patient demand
- **Massachusetts has much experience in health information exchange, all good, not all successful**
  - New England Health Exchange Network, MA-SHARE and MedsInfo, MAeHC pilot projects
- **Maturation of HIE market and lessons learned have informed the design and execution of the Massachusetts Health Information Highway (Mass HIWay)**
  - Focused on market value, not mandates or regulations
  - Prices set as low as possible and set transparently – no transaction fees!
  - Governance and decision-making transparent, market-oriented, and participatory
  - Architecture flexible to unforeseeable market and technology change -- focus on network rather than applications, facilitation of point-to-point transactions
  - Narrow scope to solving practical problems for which there is demand and high confidence in execution
  - Operations vested in an established team -- timely delivery and execution are the most critical success factors
  - Data-holding entities control disclosure of data – no medical record repositories
  - Permission-based
  - Leverage industry and federal standards, allow variety of integration patterns

HIE owned and operated by MA Executive Office of Health and Human Services

- Seasoned IT team that could hit the ground running
- Enabled clearer pathway to Medicaid HIE funding

Medicaid 90/10 Funding availability announced in summer 2011

- Massachusetts was first state to receive funds – approved Feb 2012
- Subsidized 90% of development and implementation and over 80% of ongoing costs
- Private fees need to cover only ~$1.5M per year
- Allows us to keep prices very low to induce maximum participation
  - Annual fee ranges from $45K for largest legal entity to $60 for small practices
  - Fixed fee for unlimited transactions and all available HIE functions

Mass HIway Strategy: Manageable Scope

Phase 1

Direct Messaging (Send and Receive)
• Create infrastructure to enable secure transmission ("directed exchange") of clinical information • Will support exchange among clinicians, public health, and stand-alone registries • Focus on breadth over depth • Example: Patient has been discharged from hospital and wants hospital to send discharge summary to PCP

October 16, 2012

Mass General Hospital Ether Dome

Phase 2

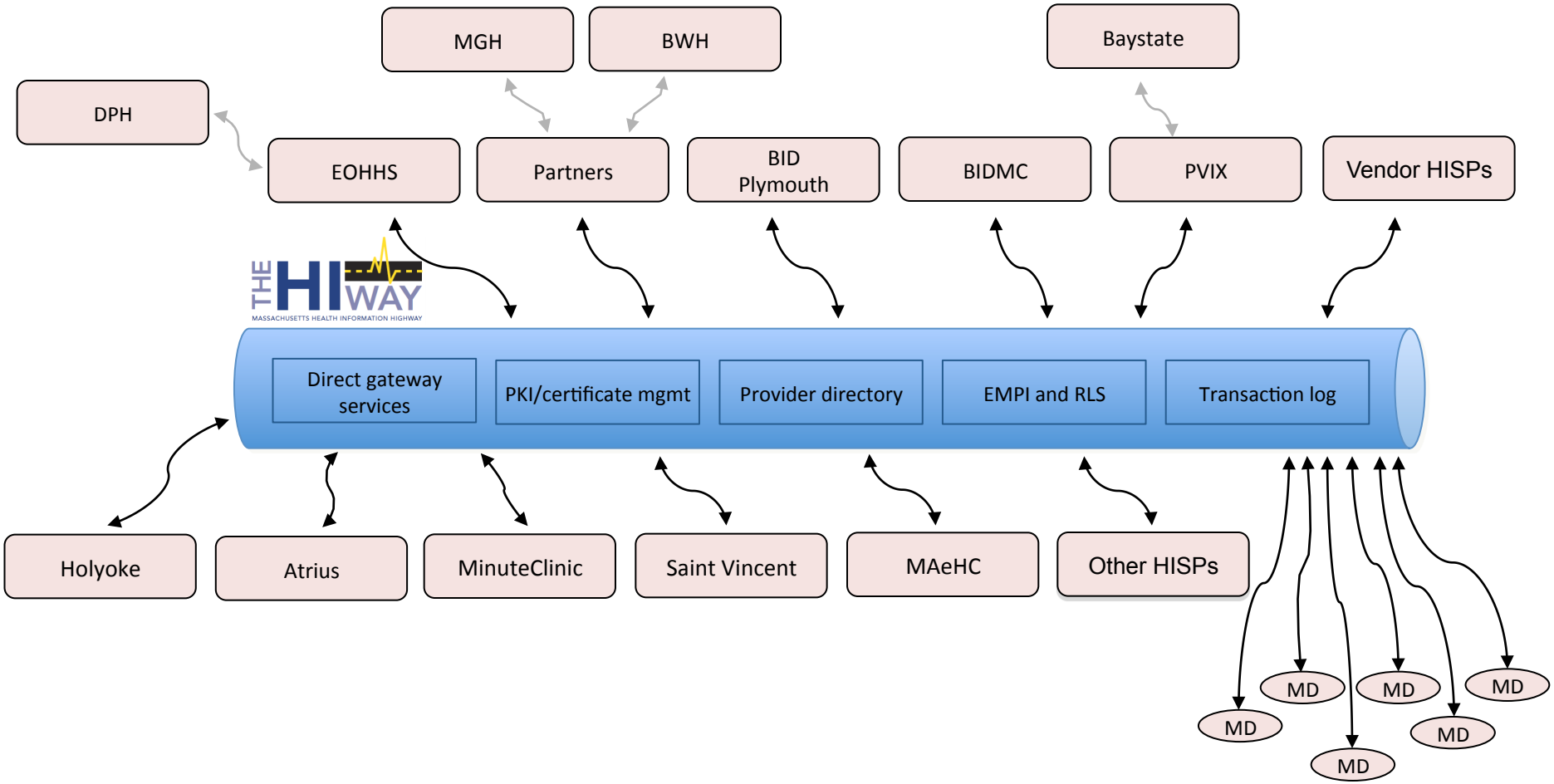
Query & Retrieve
• Create infrastructure for cross-institutional queries for and retrieval of patient records • Add additional public health services • Example: Patient has been admitted to hospital and wants hospitalist to have patient record from PCP

January 7, 2014

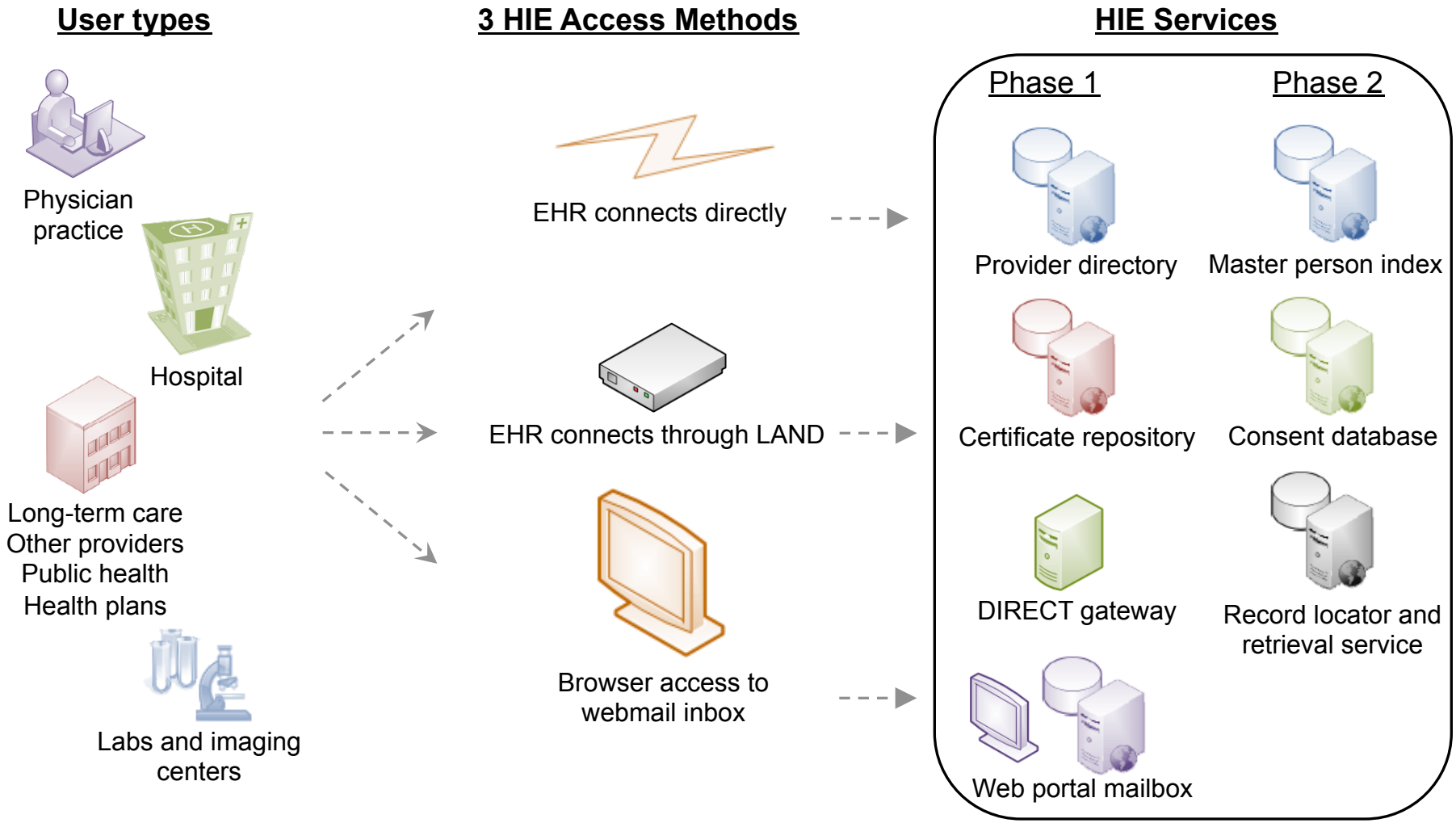
Beth Israel Deaconess Hospital ED

Shared Services to Enable Point-to-Point Transactions

Illustrative Example



Variety of Integration Patterns to Meet Market Needs



Variety of Integration Patterns to Meet Market Needs

User types

Physician practice

Hospitals
Long-term care
Other providers
Public health
Health plans
Labs/Imaging

Patients

Phase 2 HIE Services

Master person index

Consent database

Record locator and retrieval service

Four Query-Retrieve Methods

Manual retrieve

- Find record location through HIE portal
- Retrieve records manually (phone, fax, other)

"Push-Push"

Request

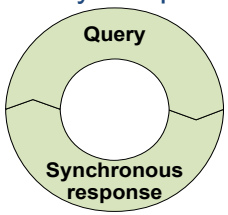
Asynchronous reply

- Use existing Direct standards for manual request-reply
- Email-like functionality
- Does not require new standards – leverages Stage 2 MU

Cross-entity viewing

- View other EHR within own EHR or HIE Portal
- No data or documents exchanged
- Single-sign on across systems
- Used by Atrius, BI, others today

"Query-Response"



- Query with automated response
- Like electronic eligibility or RX history requests
- Requires new standards beyond Stage 2 MU

Mass HIway Current Status

Over 2.2M cumulative transactions to date

134K in March 2014

Use case	Cumulative total transactions through 11/30/13	Cumulative total transactions through 2/20/14	% Change
Care Coordination	208	5,343	2469%
Public Health	52,261	120,839	131%
Case Management	21,236	29,941	41%
Quality Reporting	626,908	845,123	35%

* For identified use cases

- **105 entities now live in production on the HIway**
- **Pipeline**
  - Additional 35 have signed contracts and now in production
  - 11 vendors and HISPs actively completing testing
- **Key near-term drivers of growth**
  - Meditech rollout
  - Public health reporting
  - HISP-HISP enablement

Patient Centered HIE

- **Reflections on Apple HealthKit**
- **Implications of View, Download, Transmit**
- **Urgency of Care Management**
- **Advanced Directives and Physician Orders for Life Sustaining Treatment**
- **Shared care plans**

Thoughts on Privacy and Security

- **Organized Crime**
- **Cyberterrorism**
- **Office of Civil Rights and Attorney General enforcement**
- **Big Data**
- **The Cloud**

Questions?

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