Patient Centered Data Home™: Scalable Model of Exchanging Patient Data Among HIEs

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Speaker Introduction

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Conflict of Interest

David Kendrick, MD, MPH
Has no real or apparent conflicts of interest to report.

Dick Thompson
Has no real or apparent conflicts of interest to report.
Learning Objectives

• Identify three or more steps in the Patient Centered Data Home™ (PCDH) model

• Illustrate how the exchange of information utilizing the PCDH model is a cost-effective, scalable solution to assuring real-time clinical data is available whenever and wherever care occurs to improve the quality of care

• Describe how usage of “triggered” alerts notifies providers that a care episode has occurred outside of the patients’ HIE “home,” and confirms the availability and specific location of the clinical data to build a more comprehensive longitudinal patient record

• List an example of a governance or compliance issue that must be resolved in order to set up a PCDH exchange

• Compare the ways PCDH is different from other national initiatives or approaches to data exchange
An Introduction of How Benefits Were Realized for the Value of Health IT

**S** SATISFACTION
Alerts model notifies providers clinical data is available and location of information. Targeted, timely information = improved provider, patient satisfaction and quality of care.

**T** TREATMENT/CLINICAL
Clinical data available whenever and wherever care occurs “centered” around patient. Creates more complete longitudinal patient record in “home” HIE.

**E** ELECTRONIC SECURE DATA
PCDH honors governance, patient consent, data use policy and regulations making it a cost-effective, scalable solution for HIE-to-HIE exchange in support of nationwide advanced interoperability.

**P** PATIENT ENGAGEMENT AND POPULATION MANAGEMENT
Alerts of care events outside of a patient’s “home” HIE makes it easy to access data. It allows care teams to better coordinate care and improve patient engagement.

**S** SAVINGS
Workflow efficiency is enhanced by notification of care events and improved access to data. Both help avoid hospital readmissions and unnecessary or duplicative testing.
Agenda

- The Problem
- The role of HIEs
- What is SHIEC and what role does it play?
- Genesis of the Patient Centered Data Home™ (PCDH)
- What PCDH is and how it works
- Where is PCDH working and future expansion
- Why is it important?
- Wrap-up, questions
The Problem that needs to be solved:

Every patient should have their complete, longitudinal health record available whenever and wherever it is needed for decisions about their care.
HIEs: Create & Maintain Critical Infrastructure

• Established with a regional/cultural centered view
• Developed based on stakeholder centric needs
• Built on stakeholder driven business/governance models
  – Engenders trust - community data trust agents
  – Strong data use agreements
  – Privacy and consent models that work within the legal framework of the region
• Built on platforms/technical architecture that support multiple applications
• Robust identity management systems and provider directories
HIEs work across silos of data, within communities, to:

- Collect, scrutinize, filter data (surveillance), alert
- **Identify** individual, provider, and content
  - Establish relationships (data types, provider index, master person index)
- Determine **where** data needs to go
- Determine **how** it needs to go (be routed)
  - “Push” – notify and/or deliver content
  - “Pull” – query access to longitudinal record (in “home” HIE)
- Determine **when** it is needed
Strategic Health Information Exchange Collaborative (SHIEC) – Association of HIE Networks

“where trust relationships and technical standards merge”

- Currently 47 members, representing >½ of U.S. population
- SHIEC members share:
  - Common vision
  - Best practices
  - Problem solving
  - Resources
  - Establish national initiatives
- eg: the Patient Centered Data Home™ (PCDH) Project
What Role Can SHIEC Play?

SHIEC: 47 HIE’s representing >½ of U.S. population
SHIEC member populations
(n=47, representing >½ of U.S. population)
The Interoperability Challenge:

Even though SHIEC members are “well connected” within their respective communities, how do we connect the SHIEC member communities together… efficiently and effectively.
Interoperability Spectrum

• **Basic interoperability**: Point of care - typically federated data exchange, e.g.:
  – New patient visits PCP, external records needed
  – Patient admitted to hospital out of home region

• **Advanced interoperability**: Includes
  – triggered notifications to those who need to know
  – often requires at least some centralized architecture
  – Supports analytics and measurement, VBPMs
Basic Interoperability: Challenges

• Related to current federated queries via XCA
  – Who to query: Identity issues
    • Identity must match closely: Likelihood of match is highly dependent on MPI quality, sophistication, and business rules on the receiving end.
  – Where to query:
    • Must specify locations to search: Difficult to know where a patient received care - not possible to query “everywhere.”
  – When to query:
    • Must know when to execute query: Many important clinical events need rapid responses.
Example: Oklahoma Patient Data Outside MyHealth (HIE)
Patients with Data Outside their Home HIE: 12M patients
The Solution: Patient Centered Data Home™ (PCDH)
SHIEC’s Advanced Interoperability Project

- “Exception” event surveillance – across boundaries
- Simple & cost-effective - use existing standards & technologies
- Scalable
- Zip code-driven alerts
- Providers can complete a targeted query (pull information) from other HIEs based upon a “trigger” event
- Patient information is available when and where it’s needed
- Data becomes part of the longitudinal record in patients’ home HIE
What is PCDH?

• A Patient Centered Data Home™:
  – Creates **The** comprehensive longitudinal patient record in the HIE where the patient resides
  – Provides real-time clinical data
    • No matter where care event occurs
      – Across domain and geopolitical boundary’s - “No Wrong Door!”
  – A cost-effective, scalable method of exchanging patient data
    • Care events automatically “monitored” by HIE’s
    • Automatic care team notifications “triggered” by an event
PCDH Guiding Principles

• Each HIE’s unique policies, technology, values honored
  – Governance preserved
  – Identity management processes sustained
  – Data use agreements honored and unchanged
  – Privacy and consent models maintained
  – Business model unchanged
  – Technical architecture preserved
Shared Vision / Shared Standards

- ADT commonly used among participants
  - Encounter notification system (alerts)
    - Zip Code determines patient data home
    - MPI number added for output to PCDH HIE
  - Downstream Alert delivery
    - Determined by each HIE’s unique protocols
- XCA query (eHealth Exchange standard)
  - Targeted query matched to MPI
    - Triggered by an alert
    - Records retrieved become part of longitudinal record in HIE
Member Population: Quality Health Network
Member Population: Quality Health Network
Patient Centered Data Home

If patient recognized and consented, ADT notification passed to provider

MyHealth receives the ADT and checks the zip code

Zip 81502 = QHN

Follow-up queries based on shared MPI numbers can be made for completed records and results

Result: All health record data on MI residents returns to PCDH
Western PCDH Project:
Enlarged interoperability
≈ 10 Million Lives

Arizona: population 6.6M - HIE: AzHeC
  • MPI: 5.9M
  • 21 hospitals and health systems
  • 2 reference labs and imaging centers

Utah: population 3M - HIE: UHIN
  • MPI: 1.8M
  • All 4 of the major health systems and most clinics/labs
  • 80% of all providers

Western CO: Population .5M - HIE: QHN
  • MPI: .6M with Clinical Data
  • 12 Hospitals, all reference labs and imaging centers
  • 94% of all providers
Technical Challenges

• Ensure that ADTs consistently have hospital identifying information
• Notifications from “outside” HIEs
  – Delivered according to existing protocols
• Automatic query - to do or not to do?
• Process for identifying when clinical data is available
### What do Providers See?

- **Patient Information**:
  - Name: Rogers, Norville S
  - Gender: Male
  - Date of Birth: 04/01/1969 (47 yrs)
  - Address: 456 SLACKER CIRCLE, GRAND JUNCTION, CO 81501

- **Ambulatory Encounters (4)**:
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<th>Date</th>
<th>Admission Type</th>
<th>Source</th>
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<tr>
<td>02/13/2015</td>
<td>ER</td>
<td>COMHSP</td>
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- **Referring**:
  - Unknown

- **Location**:
  - SALT LAKE REGIONAL MEDICAL CENTER LP

- **Source**:
  - Utah Health Information Network

- **Dates**:
  - 01-25-2016 to (No End Date)

- **Subject Type/Class**:
  - Unknown / O

- **Encounter (ID)**:
  - 0DF44FF0-71D7-48c5-B3F2-B4BE9637C2E2
Sample Detail

- Location of care event
- Contact info
- Providers noted
Sample CCD with live link to images.
QHN Stats: 04/01/2016 - 12/31/2016

**Messages**

<table>
<thead>
<tr>
<th>Sending HIE</th>
<th>Receiving HIE</th>
<th>Total</th>
<th>Acked</th>
<th>Not Acked</th>
<th>Percentage Acked</th>
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**Patients**

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<th>Total</th>
<th>Acked</th>
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<td>2025</td>
<td>1826</td>
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UHIN Stats

ADTs SENT by FACILITY

ADTs by MONTH

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<th>AZHEC</th>
<th>QHN</th>
<th>TOTAL ADTs</th>
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<tbody>
<tr>
<td>Apr 2016</td>
<td>414</td>
<td>630</td>
<td>1044</td>
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<tr>
<td>May 2016</td>
<td>487</td>
<td>605</td>
<td>1092</td>
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<tr>
<td>Jun 2016</td>
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<td>605</td>
<td>1320</td>
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<tr>
<td>Jul 2016</td>
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<tr>
<td>Aug 2016</td>
<td>620</td>
<td>716</td>
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<tr>
<td>Sep 2016</td>
<td>543</td>
<td>533</td>
<td>1076</td>
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</table>
Improved Workflow

• No workflow interruption
  – Providers receive same notifications they’re used to
  – Their work with patients isn’t interrupted
• Greater insight into patient’s health
  – Event triggered notifications
• Access to more comprehensive records
• Reduced time with calls / faxes
• Reduction in unnecessary duplicative tests / labs
PCDH: Central Hub Pilot

- Phase 1: Basic ADT Routing
  - Primary Function: ADT Exchange
    - Originating HIE sends ADT routed to Home HIE
    - Home HIE acknowledges data on patient
  - Subsequent Data Exchange
    - Requires traditional interface (i.e. eHealth Exchange interface, or other standard interface) – enriched with 100% matching

- Hub Roadmap:
  - Additional transactions:
    - Hub-routed IHE profiles (i.e. eHealth Exchange transactions)
    - Hub-routed QRY HL7 messages; MDM-wrapped CCD responses
    - Hub-routed FHIR transactions (if requested by customers)
  - Tokenized patient context
Without PCDH Hub

8 HIEs means 7 interfaces for each HIE to maintain

40 HIEs means 39 interfaces for each HIE to maintain
Initial Feature Set
- Configurable routing/filtering
- Governance controls
- Policy gates – each interface, each direction
- Field mapping/formulas

Status: >45,000 ADT’s exchanged
Central Hub Model: Scale

- Creating and maintaining interfaces is expensive
  - If SHIEC = 50 members,
  - Members would need to maintain **2,450 interfaces in total**
- Standards often not met, even for simple HL-7 transactions
- Not all HIE’s are “at the same place”
  - Geographic evaluation may not be possible
  - Provider directories may not be available for all sources
- Must meet HIE’s where they are and enable single interface point with ability to maintain content, not feeds
Heartland PCDH Stats: Live on 12/15/2016

• Indiana Health Information Exchange, Michiana Health Information Network, and East Tennessee Health Information Network began exchanging ADTs on 12/15/2016

• Other Heartland partners include:
  – Great Lakes Health Connect (Grand Rapids, Mich.)
  – HealthLinc (Bloomington, Ind.)
  – Kentucky Health Information Exchange (Frankfort)
  – The Health Collaborative (Cincinnati)

• IHIE, MHIN, and GLHC expected to begin exchanging CCDs by February 2017

STATUS:
>60,000 ADTs exchanged in first 30 days
Scalability / Future

• Expand number of pilot(s) and add to existing pilots
• Connect pilots together
• Create more scalable infrastructure
  – One or more hubs
• Establish common measurement
PCDH Creating Interoperability Infrastructure
Importance of HIE to HIE Exchange

• Puts patient in the center of his / her care
• Allows timely information to be “centered around” the patient - everywhere
• Care teams in divergent geographies can coordinate care
• Better results
• Lower costs
  – Simple and comprehensive data collection
    • Reduces need for unnecessary duplication (e.g. labs & radiology studies)
  – Better medication management
• Builds more comprehensive longitudinal patient record
Value-based Payment Models

- **MACRA**
  - MIPS: 90% of doctors in America affected!
  - Alternative Payment Models (10%)
    - Such as CPC+
- **Commercial Payers**
  - ACO’s, CPC+, etc.

**2017 MIPS COMPONENTS FINAL**

- Quality Reporting: 60%
- Clinical Practice Improvement Activities: 15%
- Advancing Care Information (interoperability): 25%

MACRA – MIPS: 90% of doctors in America affected!
- Alternative Payment Models (10%)
  - Such as CPC+
- Commercial Payers
  - ACO’s, CPC+, etc.
Benefits:

- Leverages trusted local governance, laws, policies, privacy and security
- Best opportunity to quickly achieve nationwide “Alerting”
- Cost-effective technology, building on what is already in place
- Data aggregated/normalized in “Home” HIE where person resides
- Leverages shared trust and shared national standards
- Chance for accurate quality measurement (close loop on data quality problems)
An Introduction of How Benefits Were Realized for the Value of Health IT

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Questions

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