Advancing Population Health Through Health Information Exchanges and Informatics

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Disclosure

I have no relationship with a commercial interest, product or service related to the content of this educational activity.
Agenda

- Healthcare reform – how did we get here?
- Biomedical informatics and potential value
- Health information exchange & barriers
- Population health and future needs
- Recommendations
Healthcare Reform

The Perfect Storm

- Paper to electronic evolution
- Technology revolution
- Venture capital & unique partnerships
- Business model change
Paper Charts to Electronic Medical Records
We do the best at sick care!

Hospital USA
St Peters Square in 2005
St Peters Square in 2013
SIRI: Alexa, is it safe to take Ibuprofen while taking penicillin?

Alexa: Yes, SIRI you may take these two medications without harm.

SIRI: Thank you Alexa.
Venture Capital Investment

- $28.8 Billion Raised in 2018

Access to 1.6m peoples’ health data
Healthcare Business Model Changes

Current Focus

- Care providers working independently
- Treating all patients the same
- Avoiding the sickest chronically ill patients
- Being responsible for those who seek services
- Offering care at centralized facilities
- Maximizing the use of resources and assets
- Putting forth best efforts

Future Focus

- Collaborative teams of providers
- Customizing health care for each patient
- Providing special chronic care services
- Being responsible for the needs of the community
- Providing care at sites convenient to patients
- Applying appropriate levels of care at the right place
- Becoming high-reliability organizations
It is time to deploy a new set of tools, metrics and techniques to transparently and actively manage the innovation process.
Biomedical informatics is the interdisciplinary field that studies and pursues the effective uses of biomedical data, information, and knowledge for scientific inquiry, problem solving, and decision making, motivated by efforts to improve human health.

Interdisciplinary Nature of Biomedical Informatics

- Cognitive Science & Decision Making
- Management Sciences
- Clinical Sciences
- Basic Biomedical Sciences
- Computer Science (hardware)
- Computer Science (software)
- Bioengineering
- Epidemiology And Statistics
- Bioinformatics

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The University of Kansas
Clinical Intelligence and Analytics

Adapted from Competing on Analytics, Davenport and Harris, 2007
For this specific, complex process, how can we achieve the best outcome?

In general, how can we achieve the best outcome?

What will happen next if?

If trends continue what would happen?

Hypothetically what could happen?

What actions need to be taken?

What exactly is the problem?

On demand: What’s happening?

What’s happening?

Adapted from *Competing on Analytics*, Davenport and Harris, 2007
A1C Results

01_15_2016  0.073%
02_20_2016  0.065%

01_15_2016  0.073
02_20_2016  0.065

A1C level > 6.5% indicates diabetes

Two results > than 6.5%
Patient is diabetic

Health coach & dietitian interventions reduce the A1C% by 20% in 3 months
Electronic Healthcare System to Support Population Health
The demand for electronic health information exchange among care professionals is growing along with nationwide efforts to improve the quality, safety, and efficiency of health care delivery. Meaningful use requirements, new payment approaches that stress care coordination, and federal financial incentives are all driving the interest and demand for health information exchange.
Interoperability occurs when information flows freely across organizational, supplier and geographic barriers.
Enable Data from Multiple Traditional Sources

- Registration and billing
- Electronic health records
- Master person indexes
- Labs
- Claims & payers
- Pharmacy benefit management
- Analytics

Logos of various companies and organizations are shown, including Cerner, McKesson, Allscripts, Epic, MEDITECH, eClinicalWorks, GE Healthcare, sunquest, UnitedHealthcare, Humana, Blue Cross Blue Shield of Illinois, CMS, TRUVEN HEALTH ANALYTICS, PRESS Ganey, and the University of Kansas.
Terminology Barriers are Pervasive

- **SNOMED CT 42343007**
  - Congestive heart failure

- **ICD 9 438**
  - Congestive heart failure, unspecified

- **ICD-10 - 150.9**
  - Heart failure, unspecified

- **LOINC 30934 4**
  - Type natriuretic peptide

- **RxNorm 3407**
  - Digoxin

My doctor said it was heart failure.
Health Information Interoperability

Foundational
(allowed data exchange from one IT system to be received by another but does not require ability to interpret data)

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Excluding “Not sure”</th>
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<tbody>
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<td>21%</td>
<td>26%</td>
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Structural
(ensures data exchanges between IT systems can be interpreted at the data field level)

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<td>30%</td>
<td>38%</td>
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Semantic
(provides interoperability at the highest level, enabling the ability of 2 or more systems to exchange and use information)

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Not sure

<table>
<thead>
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<td>20%</td>
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### Interoperability Beyond the Hospitals

<table>
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<tr>
<th>Maturity Scale</th>
<th>Acute Care</th>
<th>Critical Access</th>
<th>Behavioral/Rehab.</th>
<th>Long-term Acute Care</th>
<th>TOTAL</th>
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<td>1</td>
<td>1</td>
<td>4</td>
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<tr>
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<td>10</td>
<td>7</td>
<td>2</td>
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<tr>
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<td>0</td>
<td>0</td>
<td>13</td>
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<td>6</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>11</td>
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</table>

“an approach that focuses on interrelated conditions and factors that influence the health of population over the life course, identifies systematic variations in their patterns of occurrence and applies the resulting knowledge to develop and implement policies and actions to improve the health and well-being of those populations.”

Growing Need for Population Health

ACO Growth

Growth in ACO Covered Lives

Source: Leavitt Partners, Projected Growth of Accountable Care Organizations, December 2015

At-Risk Contracts

Health System’s Percent of Revenue Risk-Based

Source: Leerink Partners MEDACorp Survey, June 2015

Growth Drivers

- Belief at-risk models are a better way of achieving triple aim
- Federal/State incentives & penalties
- Growth in Commercial Plans – Aetna estimates 70% of contracts value-based by 2020
- Success of initiatives tied to value-based care
- Global phenomenon – triple aim will not be limited to US healthcare market
What Makes Us Healthy

10% Access to Care
20% Genetics
20% Environment
50% Healthy Behaviors

What We Spend On Being Healthy

4% Healthy Behaviors
8% Other
88% Medical Services
Enable Data from Non-Traditional Sources

Social Behavioral Determinants of Health


Genetics 30%
Behavior 40%
Socioeconomic 15%
Environment 5%
Healthcare 10%

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Give consumers greater control over health information
Encourage transparency
Use experimental models (Medicare & Medicaid) to drive value and quality
Remove government burdens
Disrupting the Myth – All Healthcare is Local
Recommendation 1

Make patient (family) centered care a reality

- Patient’s own their healthcare data (not the medical records department)
- Patient’s healthcare data are stored virtually (cloud based)
- Patient’s decide who has access and have sole responsibility to grant access
- Use “adherence” rather than “compliance”
Recommendation 2

Leverage biometric technology

- Patients have a unique national identifier
- Available for patients and healthcare providers
- Accuracy to better identify and match patients
- Security to log into the computer
- Usability to faster access
Recommendation 3

Clarify and establish a nationwide approach for privacy and security

- Establish electronic patient-provider communications beyond patient-portals (eHealth)
- Develop social media policies
- Remove state boundaries for patient’s consent for treatment
Recommendation 4

Stimulate the demand for interoperability

• Embrace evidence based innovation
• Continue to invest in standards that map to nationally accepted terminologies (RxNorm, SNOMED CT, LOINC, SMART, FHIR, etc.)
• Increase the workforce needed to develop and map data national standards
• Leverage data already present to create electronic clinical quality measures (eCQM)
• Reduce the regulatory burden and re-documentation
Recommendation 5

Change the paradigm

Health IT & bio-informatics are direct patient care

We no longer think of an electronic health record, but a living breathing learning health system
Thank you for your time
Questions?

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