

Computable Data In Health Information Exchange

Using HIT And HIE For Patient-Centered Care

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Agenda

What Is The Right Target For Health Information Exchange?

How Can The Target Be Achieved?

What Is The Path Forward?

“If you don't know where you are going,
any road will take you there.”

- Lewis Carroll

Where should health information exchange be going?

Evidence should point the way.

**Are there current successes in
HIT-enabled patient care, where the use
of HIT is a key component?**

HIT-Enabled Diabetes Care

- 44% lower failure rate of metformin treatment for type 2 diabetes

Secondary Failure of Metformin Monotherapy in Clinical Practice; Jonathan B. Brown, Christopher Conner, and Gregory A. Nichols ; *Diabetes Care* March 2010 volume 33 number 3

HIT-Enabled Cholesterol Management

- 40% more very high risk patients achieve national cholesterol guidelines

Attainment of Low-Density Lipoprotein Cholesterol Goals in Coronary Artery Disease; Amy B. Kauffman, Kari L. Olson, Morgan L. Youngblood, Emily B. Zadvorny, Thomas Delate, John A. Merenich, Clinical Pharmacy Cardiac Risk Service Study Group et al. ; *Journal of Clinical Lipidology* May 2010 Volume 4, Issue 3

HIT-Enabled Screening

- Best breast cancer screening rates in US
- Best HIV/AIDS screening rates in US

NCQA 2008 Quality Compass[®] , Healthcare Effectiveness Data and Information Set (HEDIS) ; National Committee on Quality Assurance ; see also subsequent years' HEDIS.
Development of National and Multiagency HIV Care Quality Measures ; Michael Horburg; Institute of Medicine, Board on Population Health and Public Health Practice , Testimony, February 28, 2011

HIT-Enabled Cardiac Care

- 24% lower probability of death from heart attack
- 62% lower probability of serious heart attacks doing permanent damage
- 90% lower mortality from second heart attacks
- 89% lower all-cause cardiac mortality

Collaborative Cardiac Care Service ; Brian G Sandhoff, Susan Kuca, Jon Rasmussen, John A Merenich ; *Permanente Journal*, 2008 Volume 12 Number 3 ; See also, *James A Vohs Award for Quality*, 2007 and 2009
Preventing Myocardial Infarction and Stroke With a Simplified Bundle of Cardioprotective Medications; R. James Dudl, MD; Margaret C. Wang, PhD, MPH; Michelle Wong, MPH, MPP; and Jim Bellows, PhD ; *American Journal of Managed Care*. 2009;15(10)

Population Trends in the Incidence and Outcomes of Acute Myocardial Infarction; Robert W Yeh, Stephen Sidney, Malini Chandra, Michael Sorel, Joseph Selby ; *New England Journal of Medicine* 2010 ; June 10, 2010; 362: 2155-2165

HIT-Enabled Patient Satisfaction

- Higher patient involvement in care
- Over 800% more scheduled e-visits
- Almost 600% more secure messaging with doctors
- 24% fewer office visits

Transforming and Streamlining Modalities of Care; Catherine Chen, Terhilda Garrido, Don Chock, Grant Okawa, Louise Liang ; *Health Affairs* ; March/April 2009, Volume 28, Number 2

HIT-Enabled Care In Developing Nations

- Kenya
 - 700% improvement in HIV/AIDS medication compliance
- Rwanda
 - National life expectancy increased from 36 years to 54 years
 - Maternal mortality in pregnancy and childbirth reduced by over 90%
 - Equally dramatic improvements in HIV/AIDS and malaria care

"Digital Health for Digital Development: Connecting the Millennium Development Goals and Non-Communicable Diseases in 2011" ; United Nations Digital He@lth Initiative ; *United Nations High Level Working Session in cooperation with the Government of Antigua and Barbuda and the Government of the Republic of Tajikistan and partner United Nations agencies*, South-South News June 10, 2011 (Video available at www.southsouthnews.com)

Common HIT Conditions Point To A Target

- **Consistent, computable data**
 - HIT-enabled, standardized documentation at the point of care
 - Consistent coding, reporting, and comparative analytics
 - Application of decision support across jobs, across teams
- **Standardized data enables systematic integration of teams for repeatable, coordinated care processes**
- **All the data on all the patients is available all the time**
- **Patient-centric records are shared by the whole care team: doctors, nurses, pharmacists, other clinicians, and the patient**

Com-put-er [kohm-pyoo-ter]
one who computes; computist; (*archaic*) job
title for a person who performs calculations.

Dictionary.com Unabridged. Random House, Inc. 2011

How can HIE create conditions under which HIT-enabled care has been particularly successful?

Considerations For Alternative HIE Choices

Different ways to accomplish HIE for patient care and other purposes

Simple Point to Point Push	Centralized Data Repositories	Inter-Enterprise Exchange
<ul style="list-style-type: none">■ Low cost and easy to get started■ Potentially less secure■ Unable to automate fully■ Hard to integrate the whole care team■ Impossible to query for relevant data	<ul style="list-style-type: none">■ Massive security breach target■ Data normalization becomes financially unsustainable■ Data aggregation may be exploited for commercial gain■ Conflicts of interest are unavoidable	<ul style="list-style-type: none">■ Addresses the widest variety of use cases■ National content standards for computable data■ Local autonomy■ High security with provenance and non-repudiation of origin

Key Mechanisms Used In US HIE Today

It is not about the technology; it is whether systematic integration is enabled

PHR, Web, & Blue Button

- Unstructured free text
- Variety of standards and mechanisms employed
- Limited content/vocab standards

Direct Project eMail

- MIME, s/MIME, SMTP
- Unstructured or structured free text; IHE XDM optional
- Limited or no content/vocab standards

Vendor Proprietary

- Vendor-specific content specs tied to vendor EHR data model
- No vocab standards
- Variety of models

NwHIN Exchange

- IHE XCA, SOAP
- HL7 CDAR2 data content specifications
- SNOMED and LOINC vocab standards

Kaiser Permanente Operational HIE Experience

HIE can extend clinical integration across boundaries

- Nationwide Health Information Network (NwHIN) Virtual Lifetime Electronic Record (VLER) with KP, VA and DoD
 - Sharing HL7 Continuity of Care Documents in real time during patient care visits
- Microsoft Health Vault Pilot Project with KP's My Health Manager
 - PHR transfer of longitudinal summary records at member's request
- Colorado Health Information Exchanges (CORHIO and Epic Network)
 - Transferring medical records among providers for clinical care coordination
- NwHIN Expansion Is Underway
 - Special focus on safety net providers – enabling improved care in disadvantaged communities and rural areas
 - Social Security Administration and state level HIE organizations

NwHIN Exchange Lessons Learned

Results in patient care operations since September 2009

- HHS data specifications (HL7 CDA and CCD) were much easier to implement than expected
- Standard clinical information specifications and data integrity are critical to patient safety
- Patient ID matching is currently the biggest unsolved issue
- Operational processes for patient authorization need to be streamlined and automated

Additional Considerations For Future HIE

Today's HIE choices must look to the future of integrated care

- Genomics
 - Each genomic signature is the most unique identifier for each individual
 - Over 500 actionable genetic SNPs that influence treatment in oncology therapy ⁽¹⁾
 - Over 70,000 SNPs known to affect disease development, course, response to therapy ⁽¹⁾
 - Decision support systems will require tens of thousands of genomic rules

- Trust
 - HIE depends on sustained public trust
 - Security and confidentiality can be best addressed by those who have a direct care relationship with the patient

(1) Where's the Signal Amidst the Noise?, John E. Mattison, *The Future of Healthcare (Conference Papers)*, Corporate Research Group, August 2011

The Next Step: Care Connectivity Consortium

Care Connectivity Consortium Overview

Announced April 6, 2011

- Mayo Clinic, Geisinger Health System, Intermountain Healthcare, Kaiser Permanente, and Group Health Cooperative Plan to Securely Share Patient-Specific Data Through Care Connectivity Consortium
- The goal of the consortium is to demonstrate better and safer care with better data availability
- Committed to sharing complete medical record data for treatment purposes, starting with critical continuity of care data elements and expanding the data set over time
- Using national standards, the same as NwHIN Exchange

Care Connectivity Consortium Status

On-track and working towards operational implementation

- Collaborative work towards production operations is proceeding according to the plan announced April 6th
- Future: expansion to additional public and private care providers for data exchange for treatment purposes
- Future: consideration of additional use cases

Using Standards To Achieve Health

- The results are in:
Using patient-centered, standardized, computable health information for systematic integration of care delivery can improve health.
- Some HIT standards enable computable data to be used effectively across organizational and jurisdictional boundaries. Other standards do not.
- We are all resource-constrained.
Where should resources be applied?