

# Connected Health: Building a Scalable Patient Centric Health System

## HIMSS: Southern California Chapter 2nd Annual Academic Alliance Conference

### February 5, 2010 Los Angeles, California

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Building a Scalable  
Patient Centric Health System**

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**Todd B. Taylor, MD**  
Physician Executive

**Microsoft** | Health Solutions Group

### EMR Adoption Model

Cumulative Capabilities

		% of US Hospitals	
		2007	2008
Stage 7	Medical record fully electronic; HCO able to contribute CCD as byproduct of EMR; Data warehousing in use	0.0%	0.3%
Stage 6	Physician documentation (structured templates); full CDSS (variance & compliance); full RIS/PACS	0.3%	0.5%
Stage 5	Closed loop medication administration	1.9%	2.5%
Stage 4	CPOE; CDSS (clinical protocols)	2.2%	2.5%
Stage 3	Clinical documentation (flow sheets); CDSS (error checking); PACS available outside of radiology	25.1%	35.7%
Stage 2	Clinical Data Repository; Controlled Medical Vocabulary; Clinical Decision Support; may have Document Imaging	37.2%	31.4%
Stage 1	Ancillaries: Lab, Radiology, Pharmacy - All Installed	14.0%	11.5%
Stage 0	Laboratory, Radiology, & Pharmacy NOT Installed	19.3%	15.6%

Source: HIMSS Analytics Databases (derived from the Dorenfest IHDS+ Database™) N = 5073/5166 © 2009 HIMSS Analytics

## Dirty Little [HIT] Secretes

**The New York Times Business**

### Little Benefit Seen, So Far, in Electronic Patient Records

By STEVE LOHR  
Published: November 15, 2009

The nation is set to begin an ambitious program, backed by \$19 billion in government incentives, to accelerate the adoption of computerized patient records in doctors' offices and hospitals, replacing ink and paper. There is wide agreement that the conversion will bring better care and lower costs, saving the American health care system up to \$100 billion a year by some estimates.

**But a new study comparing 3,000 hospitals at various stages in the adoption of computerized health records has found little difference in the cost and quality of care.**

http://www.nytimes.com/2009/11/16/business/16records.html?\_r=1&sq=Little%20Benefit%20Seen,%20So%20Far,%20in%20Electronic%20Patient%20Records%20&st=cse&adxn1=1&sc=1&adxn2=126001471-ovMCDerAjbI8NRRRTeIpg

ORIGINAL CONTRIBUTION

## Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors

Ross Koppel, PhD  
Joshua P. Medley, MD, PhD  
Abigail Cohen, PhD  
Brian Abaluck, BS  
A. Russell Localio, JD, MPH, MS  
Stephen E. Kimmel, MD, MSCE  
Brian L. Strom, MD, MPH

**JAMA**  
March 9, 2005  
Vol 293, No. 10  
Pages 1197-1203

➤ **RESULTS:** A widely used CPOE system facilitated 22 types of medication error risks. 3/4 of house staff reported observing these error risks, indicating that they occur weekly or more often.

➤ **CONCLUSIONS:** We found that a leading CPOE system often facilitated medication error risks, with many reported to occur frequently.

➤ As CPOE systems are implemented, clinicians & hospitals must attend to errors that these systems cause in addition to errors they prevent.

### 75% of discharge summaries don't mention pending test results

Primary care physicians often are left in the dark about what tests to follow up on  
American Medical News | August 31, 2009

Discharges devoid of details

- Accuracy of discharge summaries did not vary based on who prepared them.
- Only ¼ of summaries mentioned any pending test.
- Just 13% documented all pending tests.

**Preparers for all study summaries**

■ Medical residents    ■ Nurse practitioners  
■ Attending physicians    ■ Medical students

Source: "Adequacy of Hospital Discharge Summaries in Documenting Tests with Pending Results and Outpatient Follow-Up Providers," Journal of General Internal Medicine, September

## Data Advances In Medicine

**THEN**

- Monitoring
- MD exam
- Nurse observations

**NOW**

- Radiology
- EKG
- Labs
- Meds
- Monitoring
- MD exam
- Nurse observations

**TOMORROW**

- Continuous location tracking
- Constant VS monitoring
- Transcutaneous monitoring of glucose, EtOH, etc.
- Noninvasive testing
- Exhaled breath analysis
- Testing to maintain wellness
- Increased image utilization
- Genomic data
- Proteomics
- Personalized pharmacy
- Radiology
- EKG
- Labs
- Meds
- Monitoring
- MD exam
- Nurse observations

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## The future is automated.....

“When we reach a world in which the average piece of information is never looked at by a human, we will need to know how to evaluate everything automatically to decide what should get the precious resource of human attention.”

**Michael Lesk**

Rutgers University  
New Brunswick, NJ  
[www.lesk.com/mlesk/ksg97/ksg.html](http://www.lesk.com/mlesk/ksg97/ksg.html)

## More Dirty Little Secretes

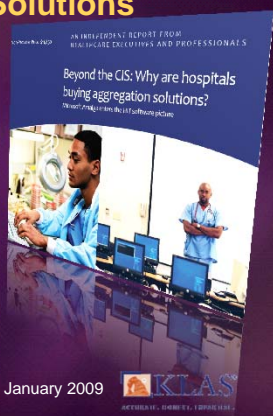
- We have spent years & millions \$ on transactional systems (EMR), that to date have brought little real value to healthcare (vs financial, operational, etc.)
- A tremendous amount of effort goes into creating data...that no one ever looks at.
- The real value in electronic medical information is not in the “transactional systems” themselves, but in managing the data they produce & turning that data into useful information at the bedside.

## Data Aggregation Solutions

“Providers report that none of their core clinical, financial, or BI solution vendors are built to deliver a comprehensive solution to satisfy today’s [data] aggregation needs.” (pg3)

Providers investing in aggregation solutions to solve 5 key problems:

- 1) Frustrated Physicians
- 2) Downtime
- 3) Information across care venues (inpatient vs ambulatory)
- 4) Core measures & changing reporting requirements
- 5) Getting information when & where it is needed



## The future is local .....

### Retail Healthcare

## The future is global .....

### “Medical Tourism”

Commoditization of Healthcare Worldwide

## The future is integrated .....

Consumer-Driven Health  
Increasing Personal Responsibility

Glucometer Cell Phone (Korea)

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## The future is mobile .....

Mobile Health Computing

## The future is virtual .....

## Telemedicine & Robotics.....

## The future is connected.....

“High tech is not about the computer. It’s about what happens when you connect all the computers & how that really changes society. You’ll be surprised at how technology improves your life in ways that you then take for granted. [Similar] to your [TV] remote control & your garage door opener.”

**Kevin Landis**  
Chief Investment Officer  
Firsthand Technology Fund

## Health Information Exchange

- CITL Study: 10-year national implementation scenario
- Implementation costs considerable
- Financially positive beginning year five
  - Total = \$337 billion in net returns
  - \$77.8 billion total per year
  - \$33.5B = Providers
  - \$21.6B = Payers
  - \$13.1B = Labs
  - \$8.2B = Radiology Centers
  - \$1.3B = Pharmacies
- \$250 per person per year

**CITL**  
Center for Information Technology Leadership  
[http://www.citl.org/news/HIEIReportRelease\\_011905.pdf](http://www.citl.org/news/HIEIReportRelease_011905.pdf)

## Managing a complex ecosystem

The diagram illustrates a complex ecosystem with five interconnected nodes: Family Health Manager, Employers, Payers, Providers, and Industry. Each node is represented by a circular image of a person. Dotted lines connect the nodes in a circular path, indicating a continuous flow of information and interaction between these stakeholders.

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