

# *Electronic Health Records: Barriers for Adoption and the Need for a Skilled Workforce in Clinical Informatics*

*15<sup>th</sup> Pharma Research Information Systems Management (PRISM) Forum Special Interest Group: Electronic Health Records (eHR) – Realising Their Benefit in the Pharmaceutical Industry*

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American Medical  
Informatics Association's  
National initiative to promote the  
use of Electronic Health Records  
for patient safety

## Patients need to

- Actively participate as partners in their health care
- Understand the benefits of personal health records (PHRs)
- Understand health data ownership and security measures

## Community-based clinicians need to

- Understand the realities of and myths about EHR implementation
- Use clinical decision support tools to improve safety and manage the quality and costs of care
- Encourage patients to engage PHRs as a means of strengthening the patient-clinician relationship and improving the data that is the basis for health care decisions

## Policy Makers need to

- Support a friendly commercial environment for EHRs
- Align government priorities regarding patient information for use in EHRs
- Create policies that reward clinicians for adopting and using EHRs

# Overview

- The Circumstantial Case for Clinical Informaticians
- What Problem are We Trying to Solve?
- Differing Views of the Tasks at Hand
- Why the Problem is Almost Unsolvable
- What is a Clinical Informatician?
- What is Our Capacity to Train?
- Invest in People

# Observations

- Hospital administrator thinks CPOE will save money, buys a TDS system, and gets bad press when Koppel documents 22 potential errors that system introduces.
- Berg asserts in JAMA editorial that only 16% of HIT implementations are successful.
- Physicians slow to adopt EHRs, should we or can we blame them.
- Kaiser is spending \$3 billion on EHR implementation. Will they see ROI; what will change in their care environment; will they transform care for 21<sup>st</sup> century?

# On the other hand

- Where we train physicians and nurses in informatics there is a long and productive history of innovation, adoption, and care transformation
  - ♦ Utah – decision support, HIS, bio-surveillance
  - ♦ Harvard – enterprise HIS, CPOE, email, EHR
  - ♦ Indianapolis – EHR, reminders, LOINC
  - ♦ Vanderbilt – CPOE, enterprise architecture
  - ♦ Columbia – Clinical dictionary, HIS, telehealth
  - ♦ Pittsburg – MARS, bio-surveillance
- Where are the early successful RHIOs?

# Consent for Care

WARNING, our physicians and nurses are attempting to use antiquated manual record-keeping systems and their own limited memories in an often futile attempt to deliver a complex set of services without error. The logic of these human beings has been tested incompletely at some point in the past, but we offer no warranty expressed or implied that any individual decision made or action taken will be provably correct. Moreover, we do not know the effect of aging, distractions, overwork, and failure to communicate on the overall care you will receive. Because we do not take a systems approach to health care services, by signing this consent you agree to participate in this admittedly error-prone and potentially life-threatening activity.

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*Sign here*

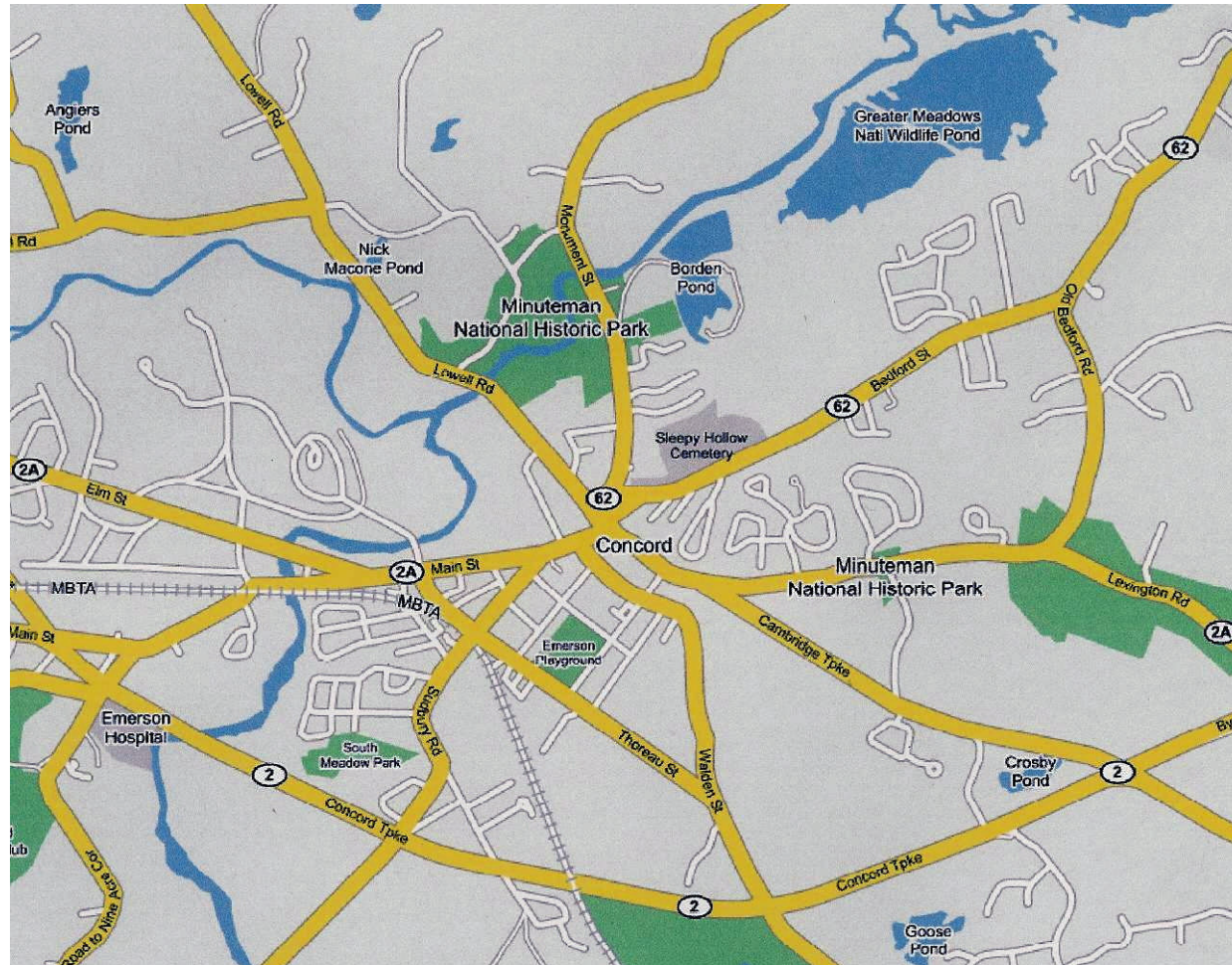
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# A Cow Path



# Paving the Cow Paths





# The Challenge

## Collect once and use many times

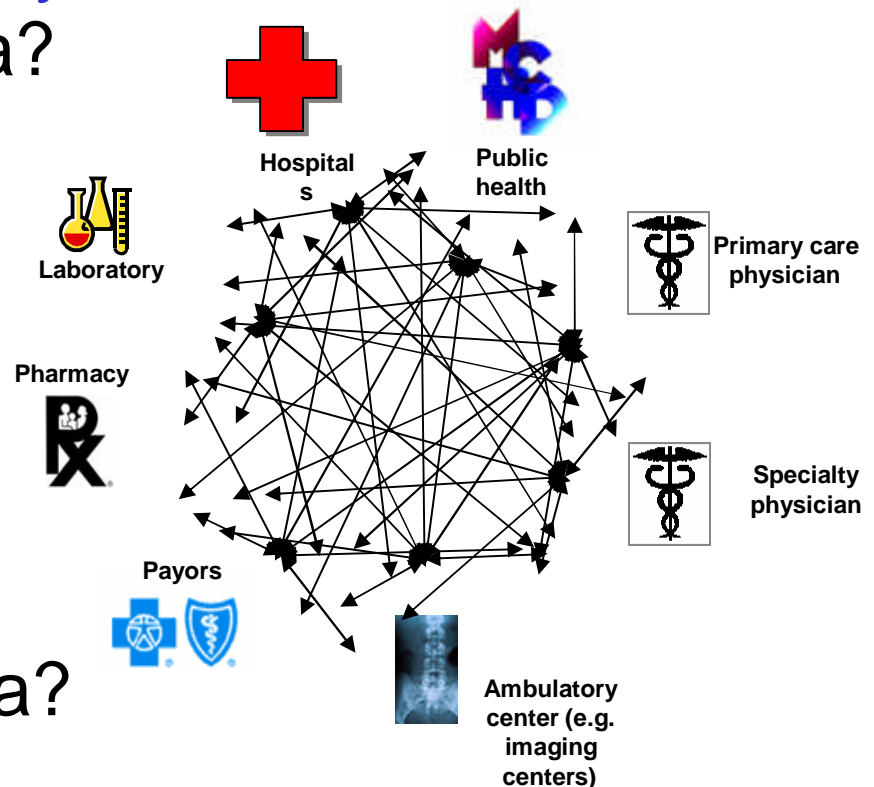
- How do you get the data?

- ◆ Professional
- ◆ Patient
- ◆ Other sources
  - Labs
  - Claims
  - Pharmacies
  - Supply chain
  - Internet activity

- How do you use the data?

- ◆ Meaning
- ◆ Business logic (rules)
- ◆ Display, communication, collaboration

Source ► Analytics ► Visualization ► Reuse

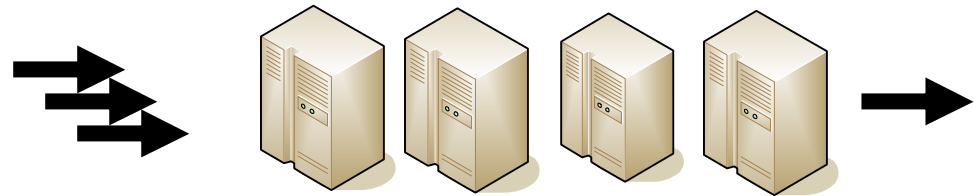


# Conflicting Models

We know a paper chart when we see it, yet we do not agree on the definition of an electronic health records

- *Clinical Systems* are designed to be:

- ◆ Objective
- ◆ Rationalize
- ◆ Linear
- ◆ Solitary
- ◆ Single minded

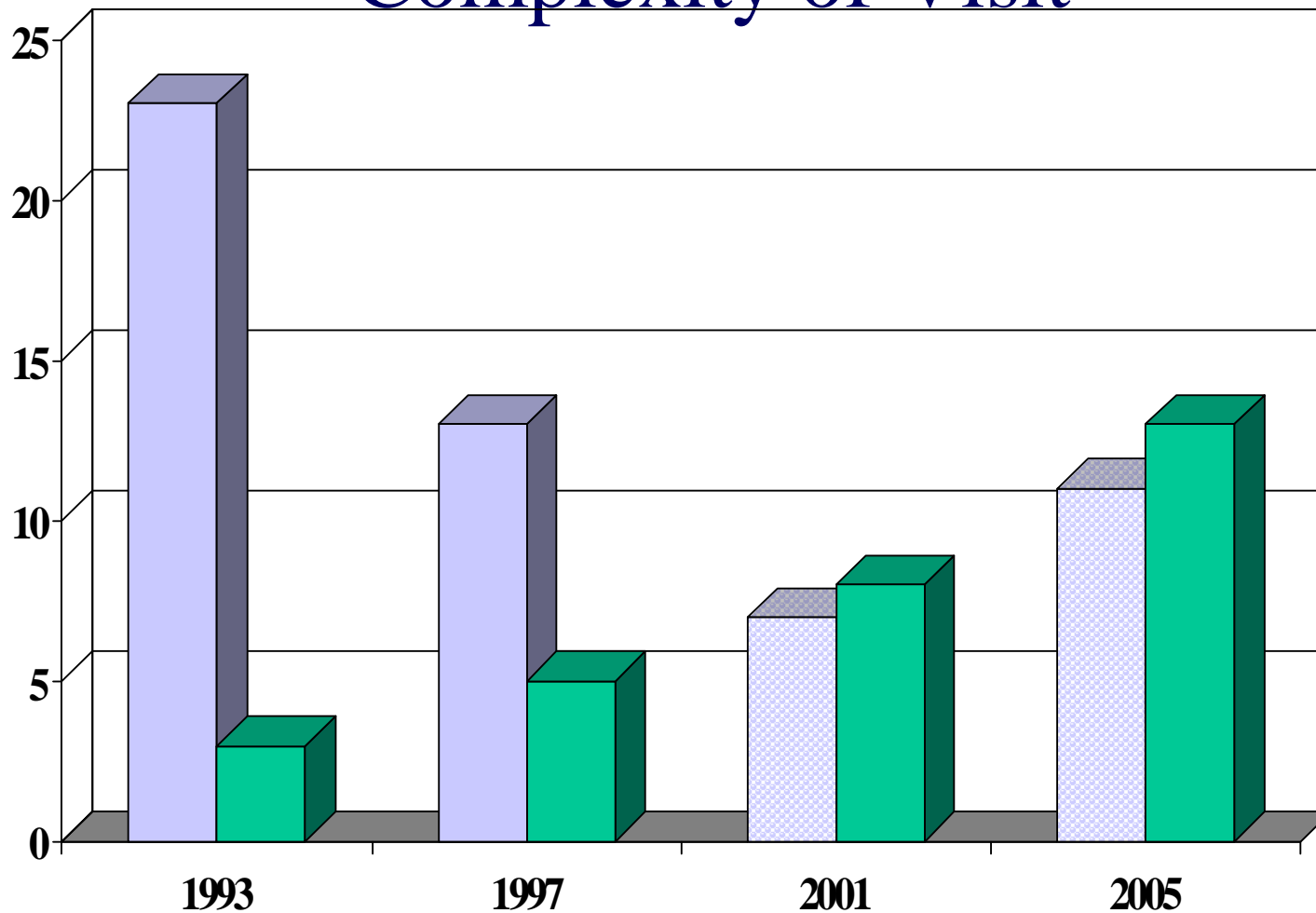


- *Clinical Work* is fundamentally:

- ◆ Interpretative
- ◆ Multitasking
- ◆ Collaborative
- ◆ Distributed
- ◆ Opportunistic
- ◆ Reactive
- ◆ **Interuppted frequently**



# Average Encounter Time VS Complexity of Visit



This means collecting data in a time starved environment is a hard problem. Physicians have more to do and less time to do it.

So consider eRX, how will that work?

# Systems

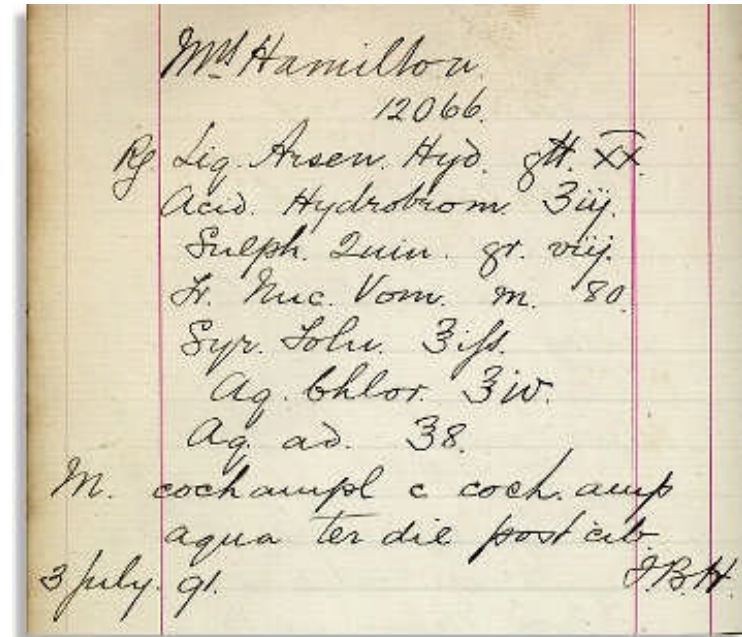
<b>Total Prescriptions* (U.S. Millions)</b>	
Chain Stores	1,811.0
Independent	779.7
Food Stores	469.6
Long-Term Care	245.2
Mail Service	213.9
<b>Total U.S. Market</b>	<b>3,519.4</b>



\*Source: IMS Health, National Prescription AuditTMPlus, 1/2005

# What is the Cost of 1 Second?

- 3,519,400,000 seconds
- 58,656,667 minutes
- 977,611 hours
- 40,734 days
- 470 full time physicians for 1 year
- \$78,208, 888



Mix a tablespoonful with a tablespoonful of water three times a day after meals

- Small transactions can have large effects
- Benefits may not accrue to the user
- Benefits may take time
- Adoption in time starved environment takes leadership
- Look for opportunity for transformation

# Data

- Sharing Data
  - ♦ The transportability of information  
e.g. the syntax
  - ♦ The transportability of meaning  
e.g. the semantics

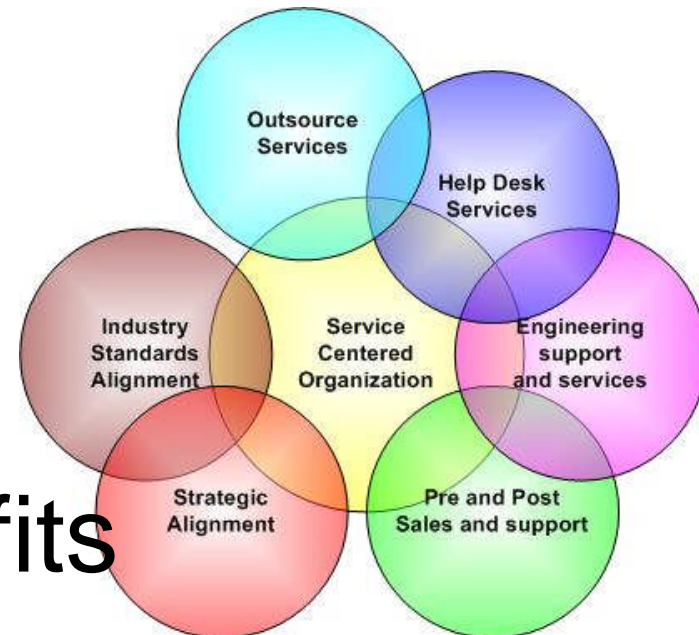
Who develops standards  
or makes the decisions to  
use them?





# Organizations

- Harmonization of Policies
- Federated versus Centralized
- Persistence
- Ownership
- Sharing the Cost
- Realizing the Benefits
- Leadership



# Patients/Citizens

- The least utilized resource in healthcare
- Consumerism on the rise
- Connectivity into the home, workplace, and school

## Self-service ► Participation

- Why is connecting with homes important for Public Health?
- Will they provide data?
- What happens in Emergencies?



# Clinical Informatics

- Integrative discipline requiring a unique combination of education, skills, and experience
  - ◆ Clinical Medicine
  - ◆ Computer Science
  - ◆ Library Science
  - ◆ Cognitive Science
  - ◆ Health Services Research and Epidemiology
  - ◆ Public Health and Population Management
  - ◆ Organizational Management
- Growing Scientific Literature
- Wealth of Experience

# Informatics Training in US

- 37 Formal Programs
- 50 to 80 MDs in Pipeline
  - ♦ 80% EHR ready
- 30 to 60 RNs in Program
- Schools of Nursing Have Separate Programs
  - ♦ 100% EHR ready
- Capacity to Triple Output

# AMIA 10x10

**10,000 Trained by 2010**

The American Medical Informatics Association (AMIA) believes that strengthening the breadth and depth of the health informatics workforce is a critical component in the transformation of the American health care system. AMIA is committed to the education and training of a new generation of clinical informaticians by the end of the decade to lead the transformation of the American health care system through the deployment and use of advanced clinical computing systems of care.



# **AMIA 10x10**

**10,000 Trained by 2010**

This training will be conducted in a wide range of settings across the United States by AMIA in collaboration with key strategic partners in the informatics education community. The AMIA membership includes thought leaders who are the most qualified to pursue this effort through their many current and future informatics training programs. These programs have a tradition of turning out the leading thinkers, dating back more than thirty years, many of whom are now at the forefront of the health information technology revolution.

# On-line Curriculum

**AMIA 10x10**  
10,000 Trained by 2010

- Overview of Discipline and Its History
- Biomedical Computing
- Electronic Health Records and Health Information Exchange
- Decision Support: Evolution and Current Approaches
- Standards; Privacy, Confidentiality, and Security
- Evidence-Based Medicine and Medical Decision-Making
- Information Retrieval and Digital Libraries
- Public Health and Population Management
- Imaging Informatics and Telemedicine
- Consumer Health Informatics
- Nursing Informatics
- Translational Bioinformatics
- Organization and Management Issues in Informatics
- Career and Professional Development

On-line modules followed by an intensive in-person sessions led by experienced leaders in the field.

# How Many Informaticians Do We Need?

- Hospitals and Health Networks
- Community Health Centers
- Multi-Specialty Practices
- Large & Small Group Practice Settings
- Solo Practices
- Visiting Nurse Associations & Home Care
- Nursing Homes
- HIT Vendors
- Health Plans & Disease Management
- Government – Federal, State, and Local

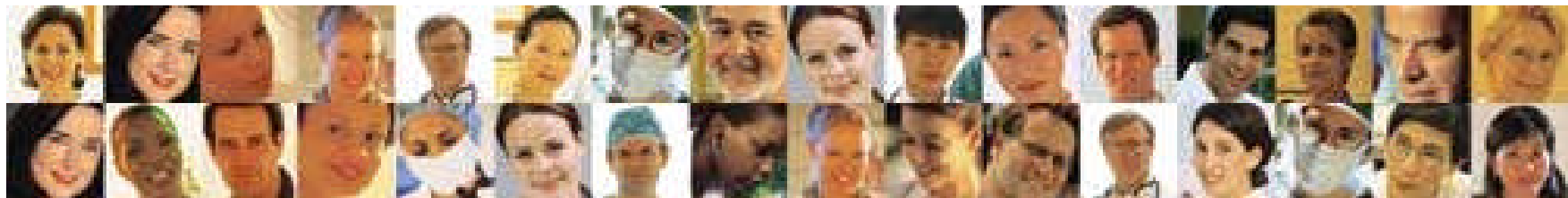


# Workforce Preparedness

- Clinical Transformation
- Health Information Management
  - ◆ Data integrity
  - ◆ Data backup
- IT Support
  - ◆ Desktop
  - ◆ Internet
- Access Control



If we collectively seek to create a healthcare system that is safe, efficient, timely, patient-centered, equitable, and effective, then every time you invest in technology, you must also *invest in people* to use this technology wisely and well.



[www.amia.org](http://www.amia.org)

