

# Electronic Health Records A Transformative Change for Public Health



## **Seth Foldy, MD, MPH, FAAFP**

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Centers for Disease Control and Prevention



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention

# What is an Electronic Health Record (EHR)?

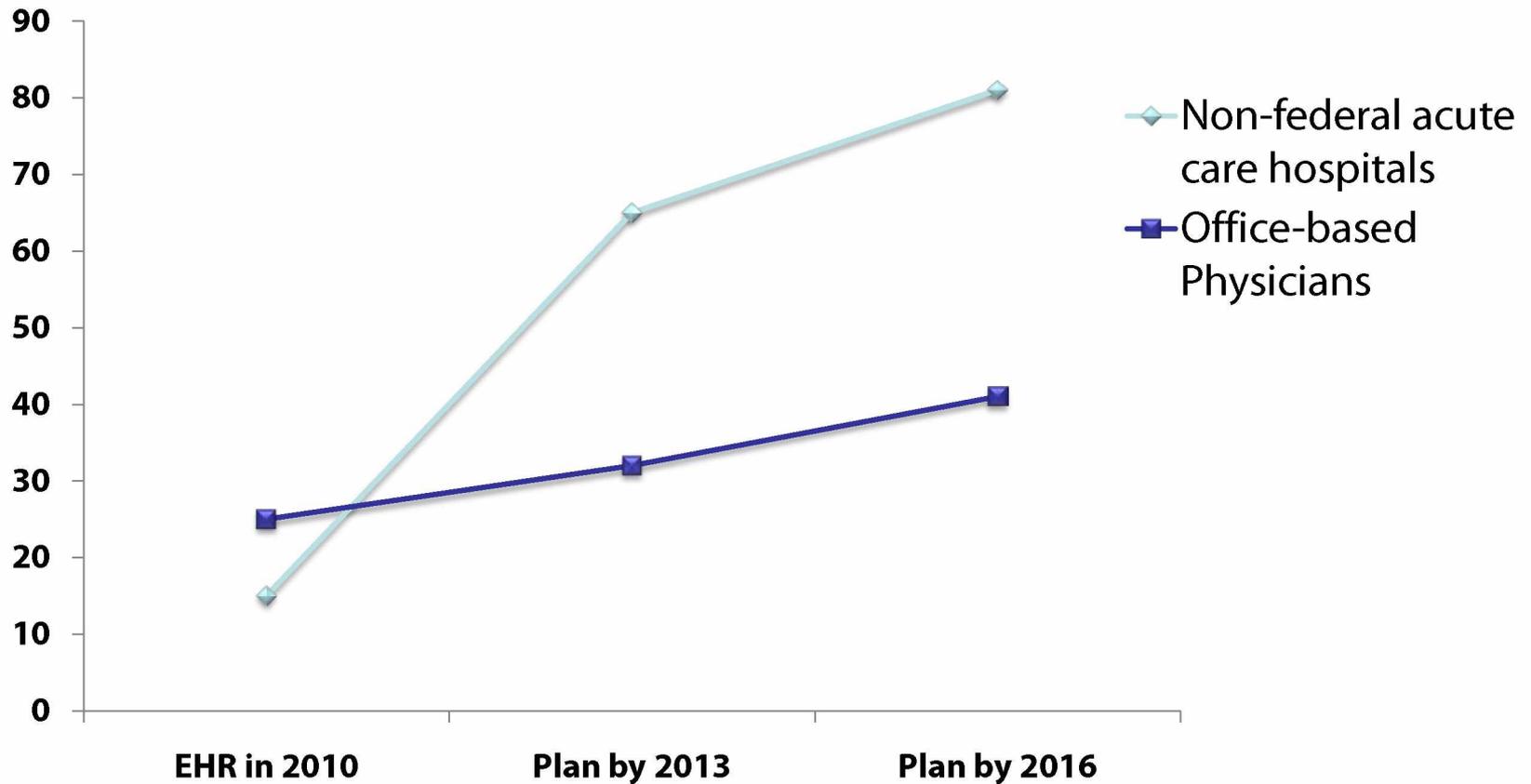
- ❑ **A systematic collection of patient electronic health information organized to assist the care of patients and groups of patients (like a practice's population)**
- ❑ **Digital formatting enables information to be used and shared over secure networks**
  - Track care (e.g., prescriptions) and outcomes (e.g., blood pressure)
  - Trigger warnings and reminders
  - Send and receive orders, reports, and results

# What is a Health Information Exchange (HIE)?

- ❑ **Technical and social framework that enables information to move electronically between organizations**
  - Reporting to public health
  - ePrescribing
  - Sharing laboratory results with providers



# EHRs: Planned U.S. Adoption Rising Fast



# Health IT for Economic and Clinical Health (HITECH) Driving Rapid Change

## ❑ HITECH Act incentives and programs

- \$20B in Medicare and Medicaid incentives for eligible acute-care hospitals and health care providers to
  - Adopt certified EHRs
  - Exchange information electronically with key partners via Health Information Exchange (HIE)
  - Achieve objectives of “Meaningful Use” of EHRs

## ❑ Objectives escalate over time

## ❑ Later start = lesser incentives

## ❑ \$2B programs from ONC to address workforce, technical standards, and other obstacles

# Goals and Objectives of HITECH and EHRs

## Stage 1: 2011–12

- ❑ **Improve care quality, safety, efficiency, and reduce health disparities**
  - Quality and safety measurement
  - Clinical decision support (automated advice) for providers
  - Patient registries (e.g., “a directory of patients with diabetes”)
- ❑ **Improve care coordination**
- ❑ **Engage patients and families in their care**
- ❑ **Improve population and public health**
  - Electronic laboratory reporting for reportable conditions (hospitals)
  - Immunization reporting to immunization registries
  - Syndromic surveillance (health event awareness)
- ❑ **Ensure adequate privacy and security protections**

# Public Health Opportunities

- ❑ **Improving public health surveillance and practice**
  - More complete and faster reporting of existing data
  - New data will become available on population health and quality of care
  - Standardized data: Easier use, reuse, and analysis
- ❑ **Improving and measuring prevention activities in clinical settings**
- ❑ **Improving communication between public health and health providers via EHR in the context of care**
  - “This patient appears to lack measles immunization”
  - “3 year old with diarrhea? Note a *Shigella* outbreak in a local childcare”



*"We have lots of information technology. We just don't have any information."*

# Electronic Health Records The View From the Trenches



**Robert Lamberts, MD**  
Evans Medical Group, Evans, GA

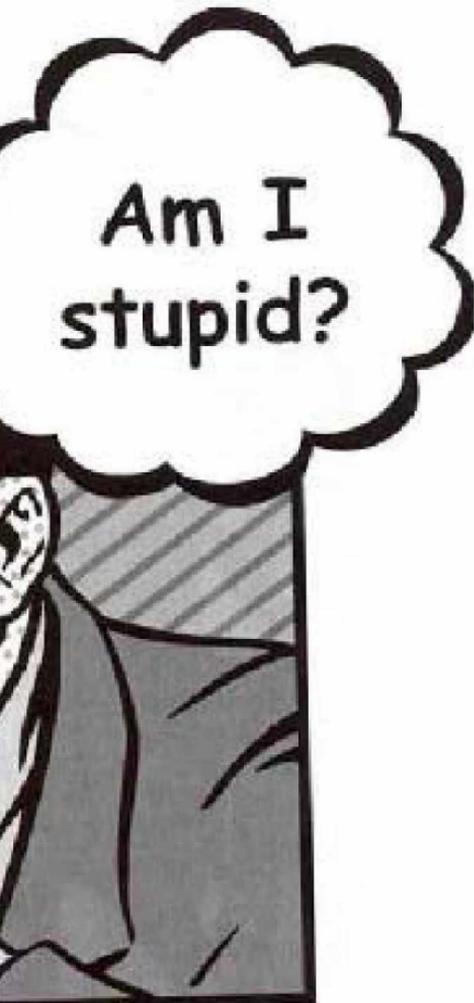


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# Who Is Th



his Guy??

A cartoon illustration of a man in a suit, shown from the chest up. He is looking slightly to the right. Above his head is a large, white, cloud-shaped thought bubble with a black outline. The text inside the bubble reads "Am I stupid?". The man's suit is grey with black outlines, and his shirt is white with a dotted pattern.

Am I  
stupid?

# My Physician Credentials

- ❑ **Primary care physician: Internal medicine/pediatrics**
- ❑ **Full-time practitioner since 1994**
- ❑ **Private practice: Co-owner of Evans Medical Group**
  - 99% of care is in office/outpatient setting



# My Geek Credentials

## ❑ Early adopter

- Adopted use of electronic health records in 1996

## ❑ Early adoption = Pain

- Computers were slow back then
- EHRs were made by engineers
- No chance of interfaces

## ❑ Early leader in use of EHR

- Obsessed with clinical workflow
- Had to stay in business!



# Why I Needed Electronic Records

- ❑ **Thousands of patients**
- ❑ **Bombarded with information from hundreds of places**
  - Most information received is not useful – it is fluff
- ❑ **Attention deficit disorder**
- ❑ **24-hour days**



# A Certified Geek

## ❑ In 2003 won HIMSS Nicholas E. Davies Award for Primary Care

- Healthcare Information and Management Systems Society (HIMSS)
- Recognizes excellence in the implementation and use of health information technology, specifically EHRs

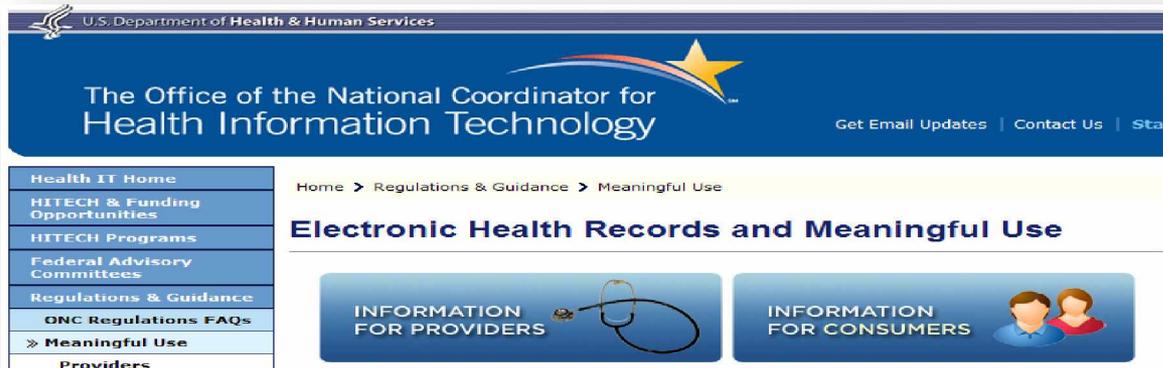


## ❑ What this means to me

- Validated my approach to EHR
- Vindicated my zeal for EHR as more than a “geek interest”
- Gave me opportunities to teach about EHR
- Didn’t pay anything, though

# A Meaningful Geek

## □ Recently qualified for the 1<sup>st</sup> stage of “Meaningful Use”



## □ What does this mean?

- Had to meet government criteria for use of EHR
- Had to prepare a submission to the government
- The check is in the mail

# The Credentials that Matter

**Academic theory and public policy  
crash land in my exam rooms**



**I am the best case scenario: If EHR and data exchange  
doesn't work for me, it won't work for anyone**

# The Promise of Information Technology

## ❑ Information

- Available and organized

## ❑ Communication: Instantaneous

## ❑ Patient care

- Not missed
- Not duplicated
- Bad care avoided

## ❑ Money: Saved



# How I Use My Patient Record

## ❑ Organize information for better patient care

- Reminder of important facts about the patient
- Catalog of patient care (i.e., a health history timeline)
- Developing a long-term care plan

## ❑ Justify billing for the visit

- Information goes into the record for nonclinical purposes
- Extra information far exceeds the useful information in volume



# Here's What We Have Done

## ❑ Improved patient care

- Called patients who have missed care
  - Immunizations
  - Diabetes care
- Improved immunization rates
  - Far above national average: Pneumovax >90%
- Sent test results to patients
- Conducted consults via e-mail

## ❑ Improved patient satisfaction

## ❑ Maintained good income



# The Hard Road Ahead

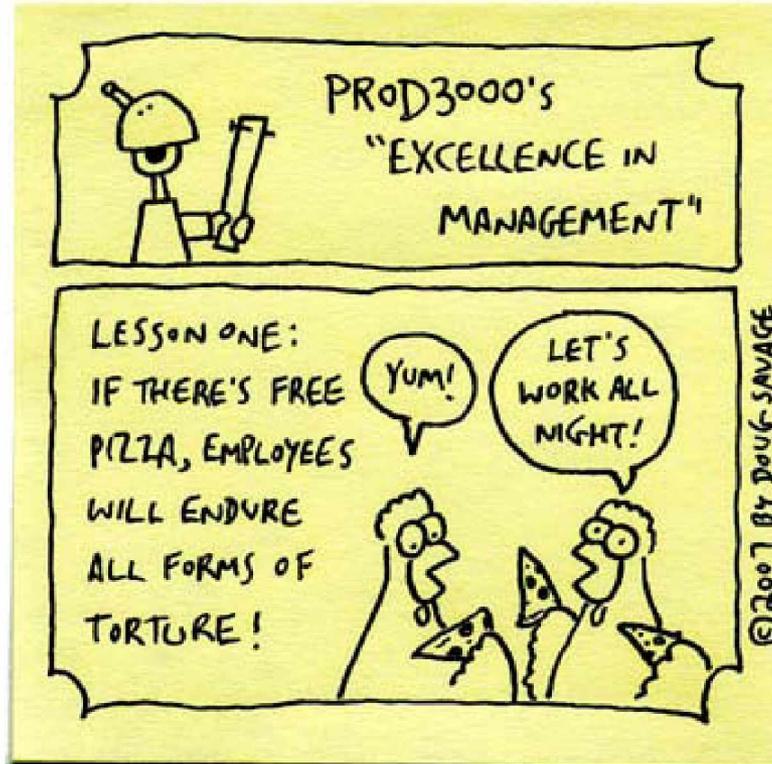
- ❑ Poor acceptance by physicians
- ❑ “Ownership” of patient Information
- ❑ Concerns about confidentiality
- ❑ Legal concerns



# Incentive: Non-negotiable for Success

## Savage Chickens

by Doug Savage



[www.savagechickens.com](http://www.savagechickens.com)

# Incentive: Non-negotiable for Success

## □ What incentives would work?

- Improve the availability of data through good data exchanges
  - Better care while maintaining confidentiality
- Streamline the process of putting **meaningful** data into the record for all parties
  - Doctors and patients, not just data-gatherers and payors
  - Reduce the documentation to free clinicians up to give care
- Give financial incentives, if needed
  - Works well for primary care, not as much for specialists
- Raise the expectations of the consumers (i.e., patients)
- Get me home at a reasonable hour

# Implementing Health Information Exchange and Electronic Health Records



**Jac J. Davies, MS, MPH**

*Director, Beacon Community of the Inland Northwest  
Spokane, Washington*

# Inland Northwest Health Services

## Who We Are and What We Do

- ❑ **Non-profit 501(c)(3) organization**
- ❑ **Provide unique, effective, and affordable services using collaborative and innovative approaches for the benefit of the entire health care continuum**
  - Connect 34 hospitals on a common information system
  - Provide electronic health records to >750 providers in >100 clinics
  - Educate patients
  - Improve access to health care
  - Facilitate the sharing of information among providers
  - Develop new efficiencies through the smart use of technology
- ❑ **Oversee a variety of health care companies and services**

# Physician Office EHRs Supported by INHS

- ❑ **Launched in 2003 with focus on eastern Washington and northern Idaho**
  - >60% of physician offices in this region are now using an EHR
- ❑ **Currently supporting physician offices in 4 states**



# EHR System Implementation Issues

## ❑ Type of system being implemented

- Adequate capturing of data to support clinical care?
- Support for population health within practice and broader?

## ❑ How the system is implemented

- Level of customization at each site
- Effect of customization on the ability to capture and use data

## ❑ How the system is used

- As intended
- Individuals creating variations



# Health Information Exchange

- Transmission of health care related data among facilities, health information organizations, and government agencies according to national standards



# Health Information Exchange

## ❑ **Very complex and fluid environment**

## ❑ **Organizational framework varies**

- Enterprise: Within a corporation; support business operations
- Community: Multi-organization; focus on immediate clinical care
- State: All states implementing now with HITECH funding

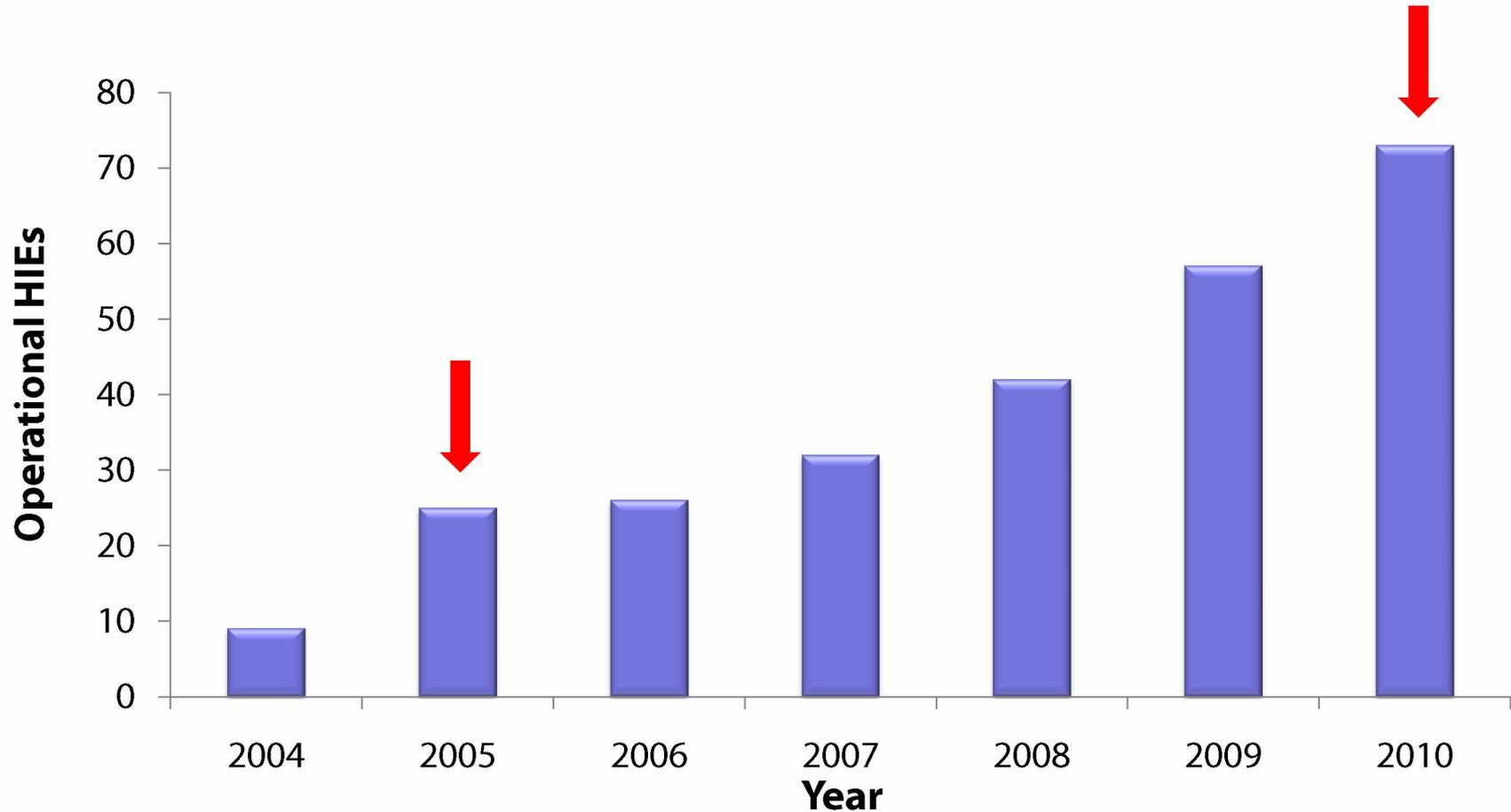
## ❑ **Services and capabilities vary**

- Clinical data
- Administrative transactions

## ❑ **Available data vary**

- Large data sources commonly available (hospitals, laboratories)
- Growing availability of ambulatory care data

# Operational HIE Initiatives in the United States



Operational HIEs, Health information exchanges that transmit data that is being used by healthcare stakeholders  
eHealth Initiative, the State of Health Information Exchange in 2010. [www.ehealthinitiative.org](http://www.ehealthinitiative.org)

# Hospitals Connected to the INHS HIE



INHS, Inland Northwest Health Services  
HIE, Health information exchange

# Using HIEs for Public Health Purposes

- ❑ **Providing de-identified emergency department and inpatient data since 2009**
  - Increasing situational awareness
  - Providing early warning of possible disease outbreaks
    - Emergence of H1N1 influenza: Real-time population health data from eastern Washington had previously been unavailable to public health
- ❑ **Now transmitting notifiable disease and condition reports electronically**



# Data Flow: From INHS to WA DOH to CDC

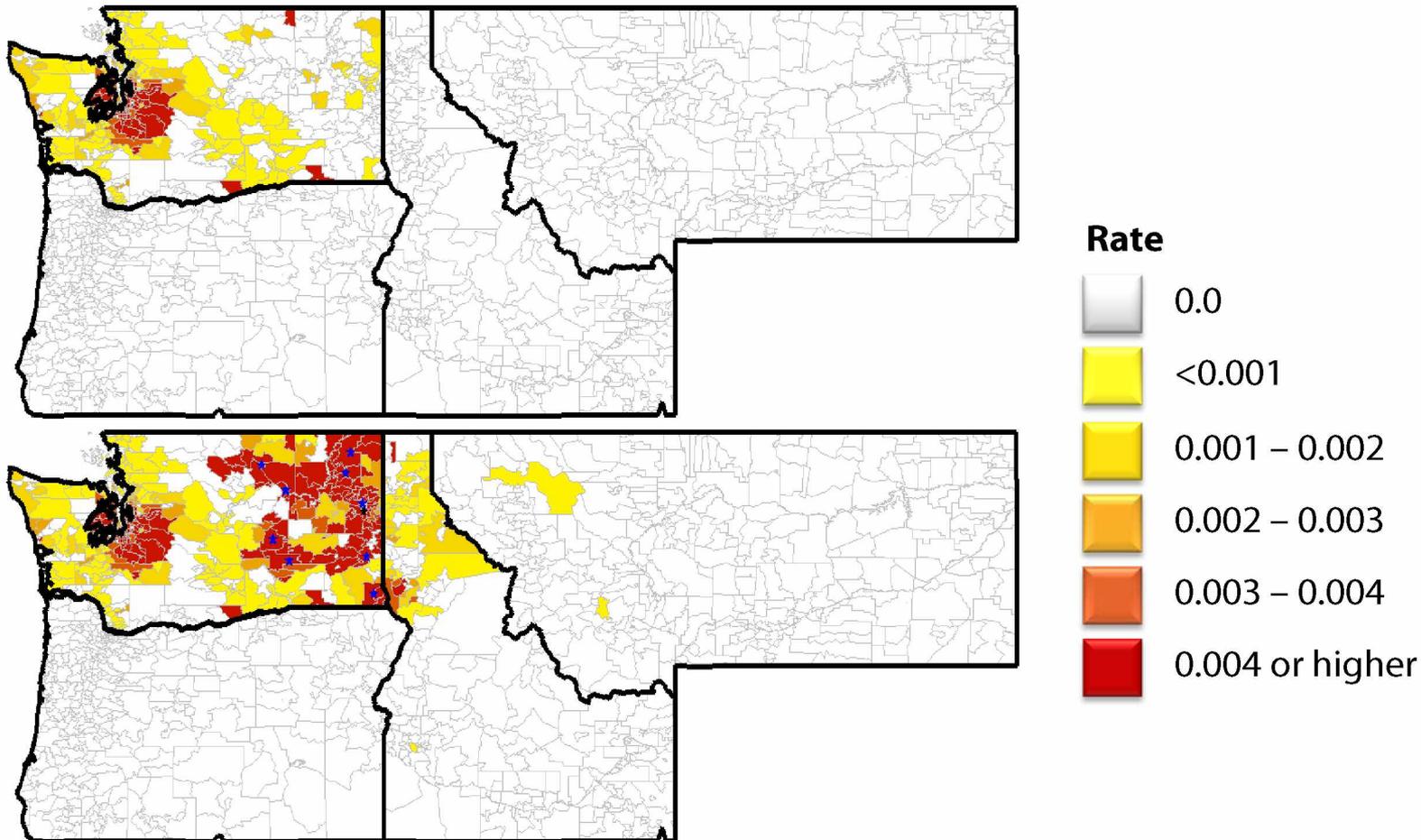


WA DOH distributes the disease reports to the appropriate local health agencies



# Geographic Coverage for Hospital Reporting in 2009 Before and After Connecting to INHS HIE

Based on Patient Encounters per capita



# Impact: Influenza

## □ During the 2010/2011 flu season

- WA DOH determined in real time that only 20-30% of pregnant women had been properly vaccinated against the flu by the time of their delivery

## □ In January 2011

- The state health officer sent out a “Dear colleague” letter asking clinicians to emphasize vaccination for pregnant and post-partum women



# Summary

## EHR and HIE Opportunities and Challenges

- ❑ **Unprecedented access for public health organization to rich sources of population health data**
- ❑ **The availability of an EHR or an HIE does not (yet) guarantee availability of data for use by public health**
- ❑ **Extensive changes underway in the health care system**
- ❑ **Public health organizations**
  - Engage at the community level
  - Take advantage of the health care system changes
  - Recognize tremendous pressures on health care organizations and providers to transform the entire health care delivery system
  - Recognize the need to meet health care providers half way



# Electronic Health Records A State Health Department Perspective



**Amy Zimmerman, MPH**

*Rhode Island State Health Information Technology Coordinator Executive*  
Offices of Health and Human Services  
State of Rhode Island



<http://www.health.ri.gov>



**U.S. Department of  
Health and Human Services**  
Centers for Disease  
Control and Prevention

# Overview

## Electronic Health Records and States

- ❑ **Public health goals**
- ❑ **Role of the Rhode Island Department of Health**
- ❑ **Rhode Island experience**
- ❑ **Challenges and opportunities**



# Goals

## □ **Effective use of EHR data**

- Protect and improve the health of individuals
- Inform health care policy and practice at the consumer, provider, and community level

## □ **Groom providers as public health ambassadors**

- Provide both “individual sick care” and “practice-based preventive care”

**GOALS**

# Role of the Department of Health in the Electronic Transformation

## ❑ Leadership and governance

## ❑ Data sender and receiver

- Laboratory orders and results, immunizations, and syndromic surveillance

## ❑ Legislative and regulatory oversight

- Privacy and security, certificate of need, compliance orders, etc

## ❑ Policy development

- Standards of care, technical standards

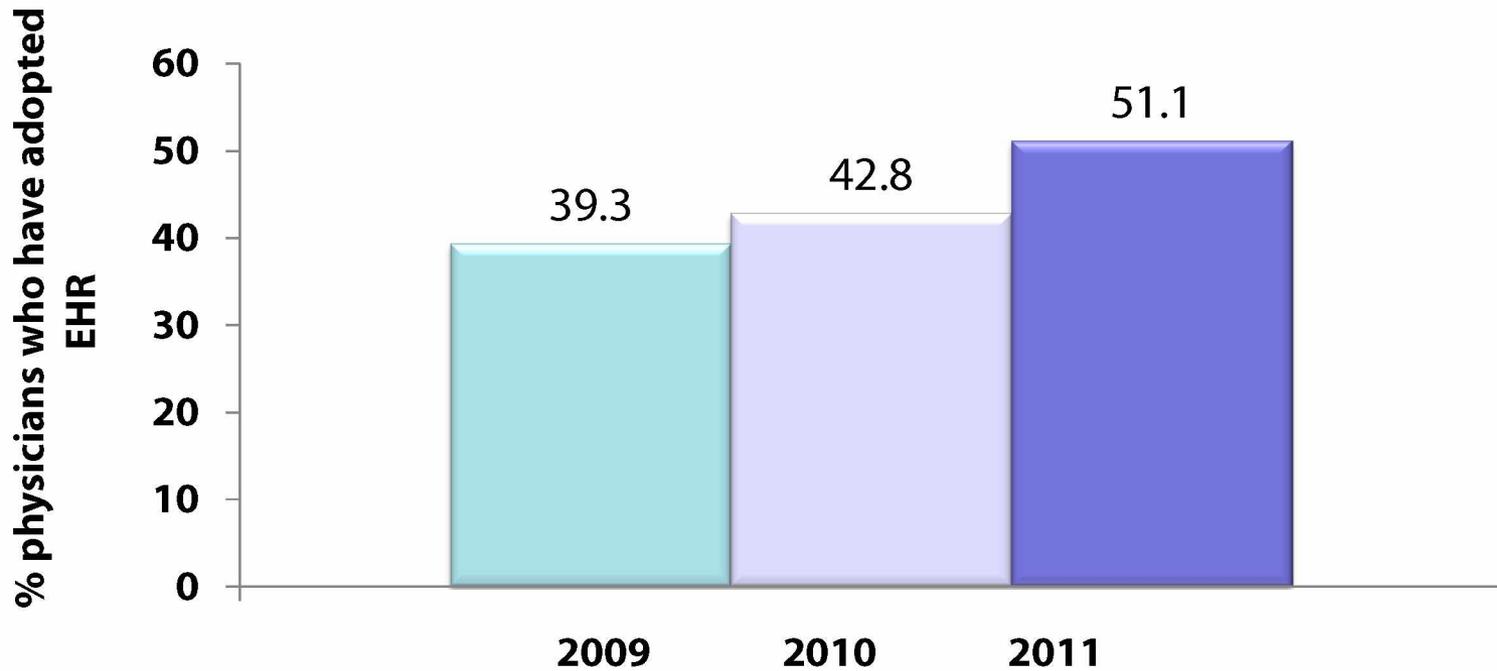
## ❑ Measurement and analytics

- Monitor adoption, alignment of metrics, analysis, and public reporting

## ❑ Funding

# Adoption of EHR in Rhode Island

## Trends among All Rhode Island Physicians, 2009-2011



EHR, Electronic health record

# E-prescribing Efforts Under Way in Rhode Island

## Track the Growth of E-Prescribing in Your State



[See your state's progress report](#)

## E-Prescribing Incentive Programs

Prescribers: Learn about incentive programs at the state and national level that can help you get started with e-prescribing.

[Learn more](#)

## Benefits of E-Prescribing

Hear what patients, prescribers, nurses, and medical are saying about e-prescribing.

[Learn more](#)

## Featured Downloads

[National Progress Report on E-Prescribing](#)  
[Clinician's Guide to E-Prescribing](#)  
[E-Prescribing Quick Guide for Physicians](#)  
[E-Prescribing Guide for Payers](#)

E-Prescriptions routed today:

510,473

## Top 10 E-Prescribing States

1. [Massachusetts](#)
2. [Michigan](#)
3. [Rhode Island](#)
4. [Delaware](#)
5. [North Carolina](#)
6. [Connecticut](#)
7. [Pennsylvania](#)
8. [Hawaii\\*](#)
9. [Indiana\\*](#)
10. [Florida\\*](#)



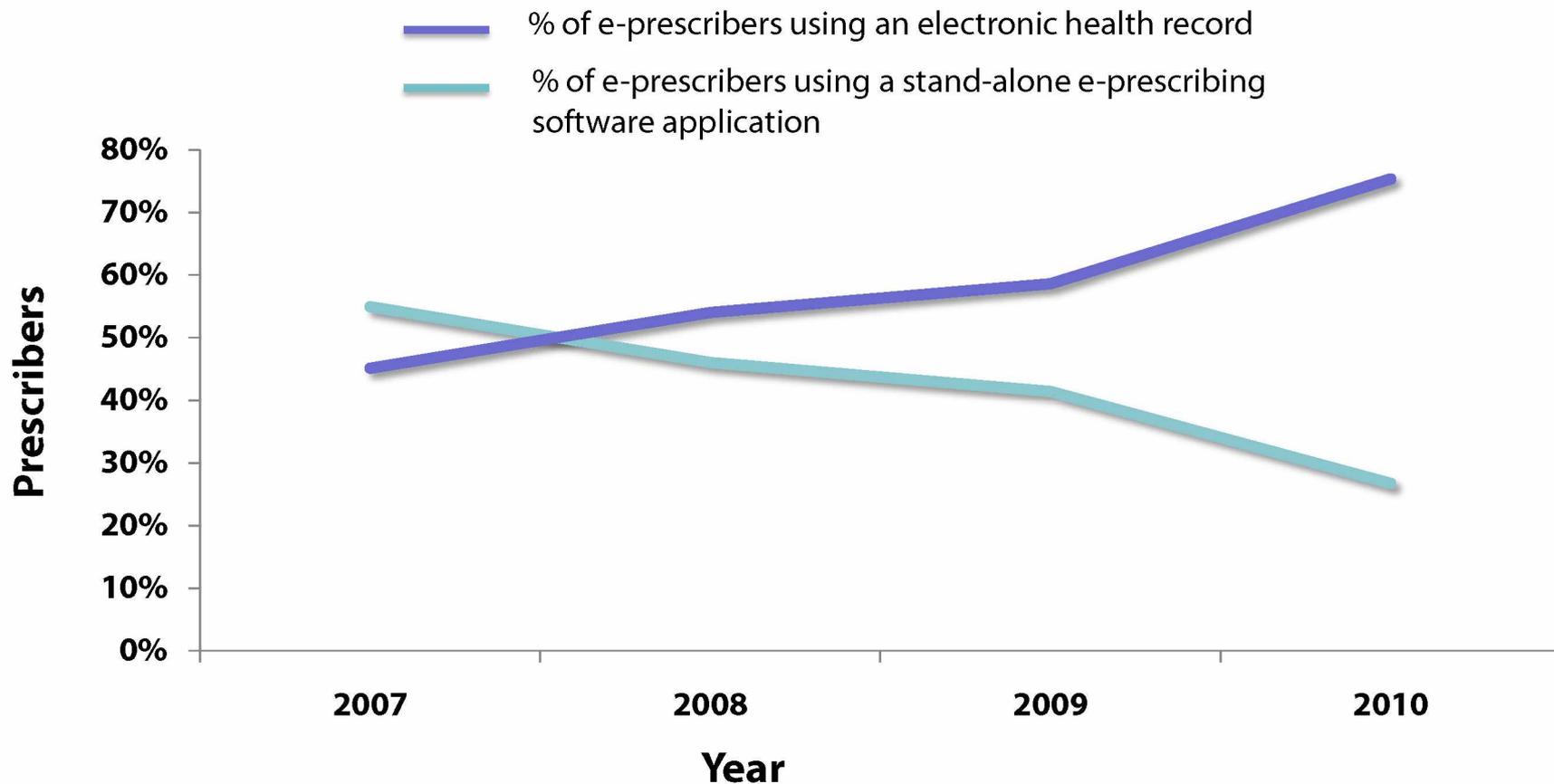
<http://surescripts.com>

# Adoption of E-prescribing in Rhode Island



	2007	2008	2009	2010
<b>% of total prescriptions routed electronically</b>	10.9	23.3	33.5	36.3
<b>% of prescribers using e-scripts for new or renewal prescriptions</b>	39.0	51.4	67.5	78.1
<b>% of pharmacies capable of accepting electronic scripts</b>	88.6	99.4	100	100

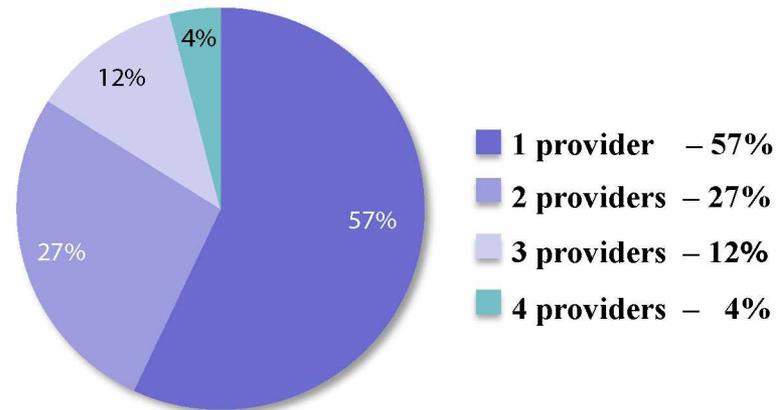
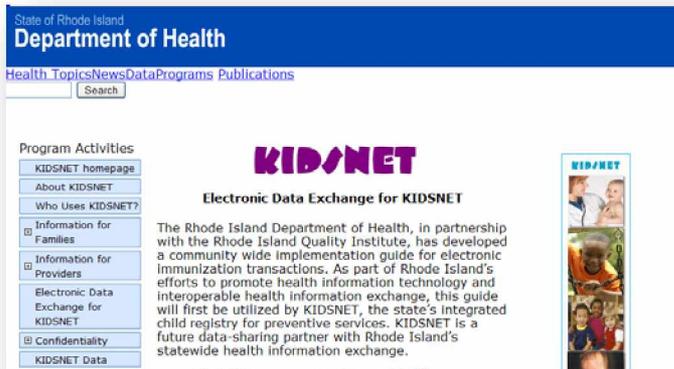
# Adoption of E-prescribing in Rhode Island



# Early HIE Efforts Underway in Rhode Island

## □ In 1990s, the RI DOH created KIDSNET

- Computerized child health information system
- Integrates preventive health information from different public health programs
- Used by providers to identify patients needing preventive services
- Used for coordination of care, quality assurance activities, and to inform policy decisions



# Current HIE Efforts Under Way in Rhode Island



## State-wide HIE System

- Goal: Improve the quality, safety, and value of health care
- Developed with AHRQ funding in 2004
- Public-private partnership
- Strong community governance through state designated Regional Health Information Organization (RHIO)
- Confidentiality and security is a high a high priority
  - Resulted in stringent consent model (opt-in)
- Regulatory oversight provided by RI DOH



www.currentcareri.com

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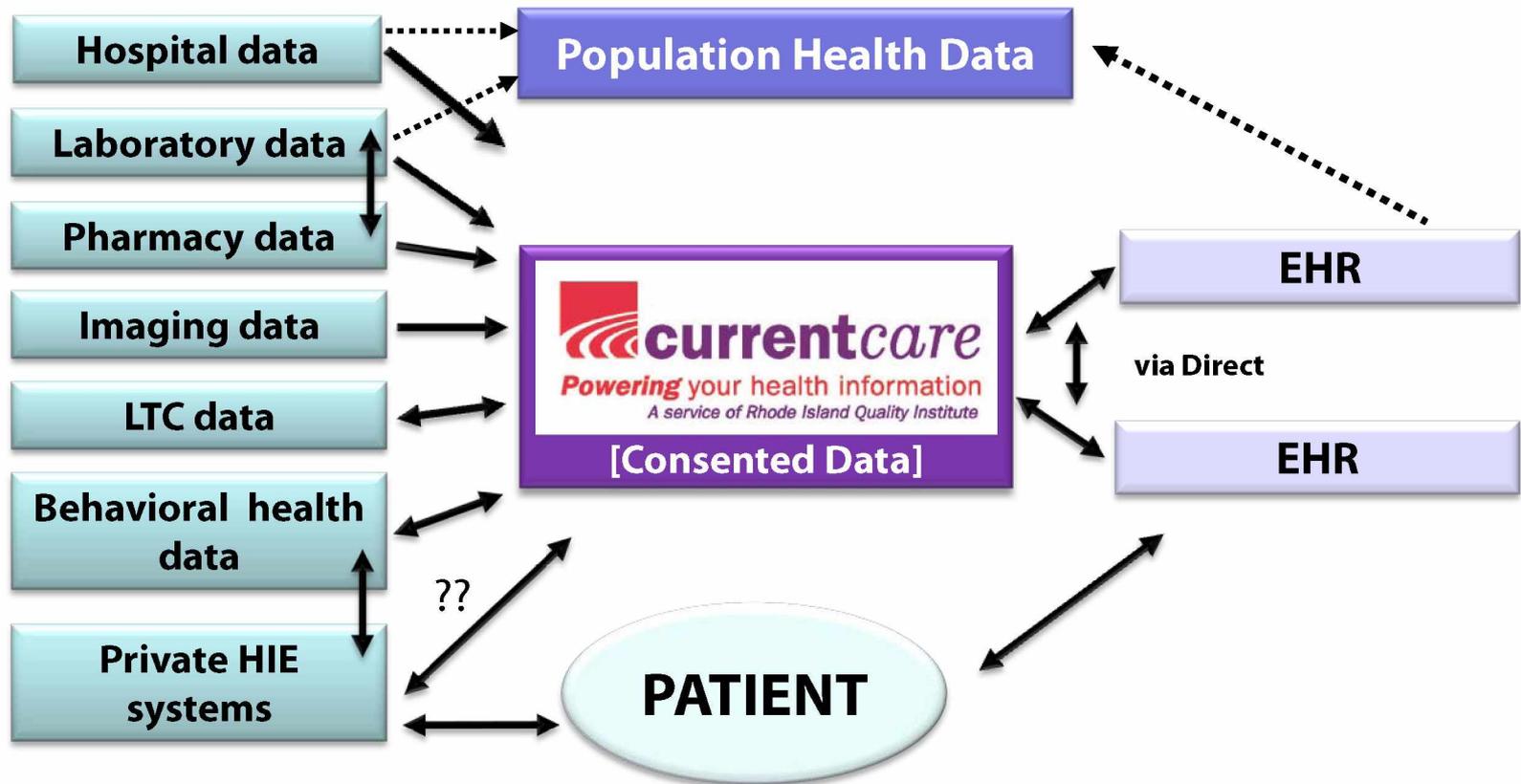
**With currentcare, you can build a foundation of health for your whole family.**

Government has been made possible through a joint effort by the Rhode Island Quality Institute and the Rhode Island Department of Health, with financial support from the federal government and other members of the health care community. The Rhode Island Quality Institute (RIQI) is Rhode Island's Regional Health Information Organization (RHIO). For more information about the Rhode Island Quality Institute, visit the RIQI website at [www.riqi.org](http://www.riqi.org).

P.O. Box 39127  
Providence, Rhode Island 02906  
1.800.458.4833

AHRQ, Agency for Health Care Research and Quality  
RI DOH, Rhode Island Department of Health  
<http://www.currentcareri.org/matriarch/default.asp>

# EHR and HIE Efforts Underway in Rhode Island



EHR, Electronic health record  
HIE, Health information exchange  
LTC, Long-term care

# Uses of EHR Data

## Prescription Data During H1N1 Outbreak, 2010

- ❑ **Tracked use of dispensed antivirals**
  - Partnered with prescribers and pharmacies
- ❑ **Discovered that 5% of all Tamiflu prescriptions were filled 5 days after being prescribed**
  - Educated patients and providers about need to close the gap
- ❑ **Educated providers about detection of non-H1N1 influenza like illness**
  - Outcome: Drop in Tamiflu prescriptions

# Challenges

- ❑ **Staffing and funding**
- ❑ **Changes in leadership and administration**
- ❑ **Technical issues**
  - Legacy and silo systems resulting in many point-to-point interfaces
  - Support for newest standards
- ❑ **Analytical issues**
  - Usability of EHR data due to quality and comparability
- ❑ **Inability of Rhode Island to use HIE data for population data due to consent model**

# Opportunities

- ❑ **Improve individual and population health**
- ❑ **Support for data-driven decision making**
  - Harmonized metrics
- ❑ **Better integration and coordination**
  - Transition to more enterprise-wide approach
  - Improved internal coordination and communication
- ❑ **Advance public health informatics and Health Care Reform efforts**

**OPPORTUNITIES**



# Public Health and Meaningful Use of Electronic Health Records Opportunities, Realities, and a Proposed Approach

**Farzad Mostashari, MD, ScM**

*National Coordinator for Health Information Technology*

# Health IT Landscape

## ❑ **2009 HITECH Act**

- Foundation for transformation of health care delivery

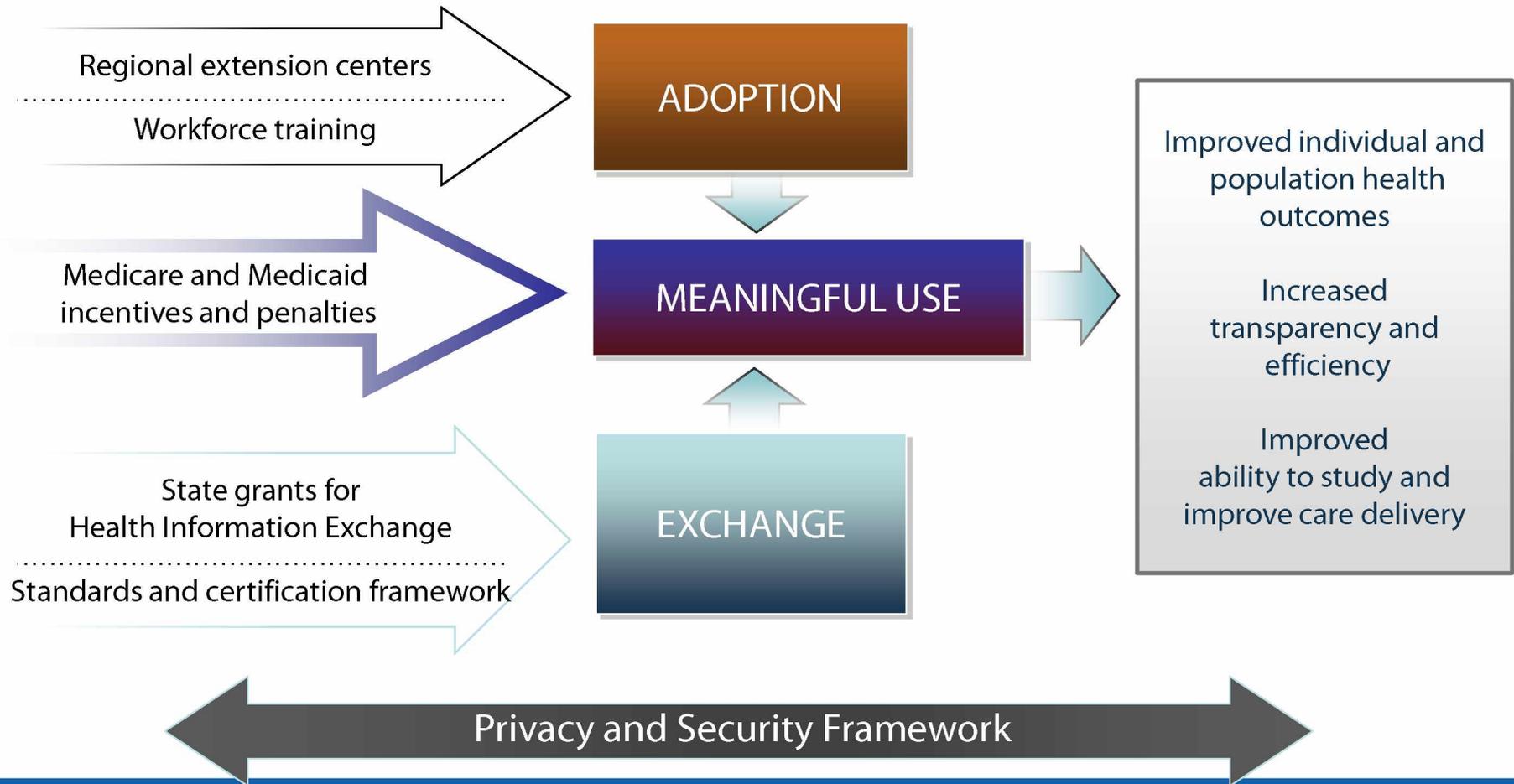
## ❑ **2010 Affordable Care Act**

- Business case for high-quality, safe, coordinated patient care

<http://www.whitehouse.gov/healthreform/healthcare-overview>

# HITECH Framework

## Meaningful Use at Its Core



# Public Health Reporting

- ❑ **Syndromic surveillance reporting**
- ❑ **Report to immunization registries**
- ❑ **Electronic laboratory reporting**

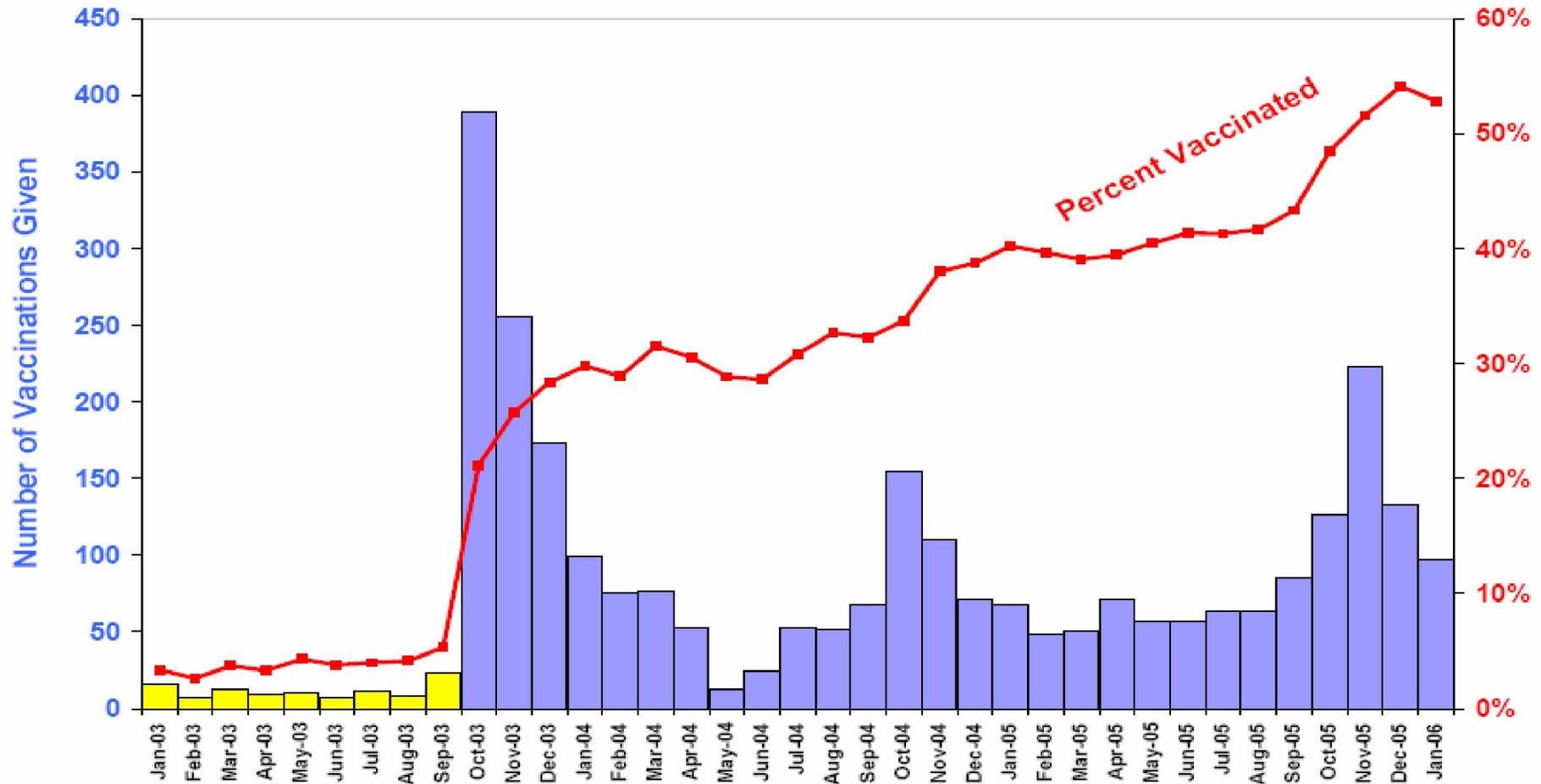


# Fewer Premature Deaths from Cardiovascular Disease

- Demographics
- Blood pressure
- Smoking
- Body mass index
- Problem list
- Medication list
- Laboratory data
- Quality measurement
- Clinical decision support
- Registry functions  
(make a list)

**Patients get  
recommended care  
only about half of  
the time**

# Vaccination Against Pneumonia among >65 Years Old



Electronic Reminders Begin

# Safer Care

- ❑ **Computerized Provider Order Entry (CPOE)**
- ❑ **Drug-drug, drug-allergy interaction checks**
- ❑ **Electronic prescribing**
- ❑ **Medication reconciliation**

**There are 100,000–200,000 medical errors  
in the United States each year**

# Patient-centered Care



# Patient-centered Care

**Patient reminders**

# Patient-centered Care

- Patient reminders
- Patient education materials**
- After visit summary**

# Patient-centered Care

- Reminders**
- Patient education
- After visit summary**



Blue Button  
**Download  
My Data** SM

- Online access**
- Patient copy**

# More Coordinated Care

## □ Shared care summary

- The typical primary care physician must coordinate care with 229 other physicians working in 117 different practices to manage care for her panel of Medicare patients



# The True Meaning of Meaningful Use

## □ A roadmap for how to transform health care to deliver care that is

- Higher quality
- Safer
- Patient-centered
- Coordinated



# Public Health Opportunities

- ❑ **Addressing health disparities**
- ❑ **Improving chronic disease care**
  - Cardiovascular disease, asthma, diabetes
- ❑ **Improving public health surveillance**
  - Monitoring influenza morbidity, vaccine efficacy, genotyping
  - Reporting of notifiable diseases
  - Physician case reporting
  - Cancer and other registries
  - Communicating with clinical care (e.g., immunizations)
  - Public health alert/ messaging
- ❑ **Reporting of births and deaths electronically**
- ❑ **Reducing prescription drug overdose deaths**

# Public Health Realities

- ❑ **Budget cutbacks, silo'd funding, silo'd systems**
- ❑ **Shortage of skilled IT workforce**
- ❑ **Legacy systems, local codes, sunk costs**
- ❑ **Variation in state requirements**
- ❑ **High degree of variability in capabilities**
- ❑ **New data exchange = new workflow demands**
- ❑ **Overwhelmed and weary with competing priorities**
- ❑ **Frustrated with stakeholders**
  - **"Health care providers only see the world through their narrow lens"**

# Clinical Realities

- ❑ Running faster just to stay in place financially**
- ❑ Shortage of skilled IT workforce**
- ❑ Legacy systems, local codes, sunk costs**
- ❑ Variation in state requirements**
- ❑ High degree of variability in capabilities**
- ❑ New data exchange = new workflow demands**
- ❑ Overwhelmed and weary with competing priorities**
- ❑ Stakeholder frustration**
  - " Public health departments only see the world through their narrow lens"**

# “The Future is Here, It’s Just Not Evenly Distributed”

- ❑ **Prove out and refine new interventions**
  - E.g., “public health alert”
- ❑ **Push state-wide action where there is readiness**
  - E.g., outpatient syndromic monitoring, prescription drug monitoring 2.0
- ❑ **Focus national efforts: Few key priorities that add greatest value and are most ready to scale**
  - E.g., electronic laboratory reporting

# What I Ask of You

- ❑ **Help all who would be Meaningful users**
- ❑ **Establish relationships and coordinate with state and local health IT resources**
  - Beacons and Regional Extension Centers
  - State Health Information Technology Coordinators
  - Workforce and Medicaid
- ❑ **Ask (data) sparingly, give (data) generously**
- ❑ **Engage with and leverage national standards**
- ❑ **Cherish the innovators and the skeptics within**
- ❑ **Expect more from us, and hold us accountable**

# Health IT

Meta Alonso  
Jamie's Mother

Putting the I in  
Health **IT** 