

# **Overview of Health IT Certification Certified Professional in Electronic Health Records and Certified Professional in Health Information Technology**

**By:**

**Margret Amatayakul, MBA, RHIA, CHPS, CPEHR,  
CPHIT, FHIMSS**

**Steven S. Lazarus, PhD, CPEHR, CPHIT, FHIMSS**

**The HIT Summit West**

**March 6, 2005**



# About Health IT Certification

- EHR and HIT training for professionals
  - Regional hotel programs
  - In-house programs
  - Online programs
- Certification for professionals
- [www.healthitcertification.com](http://www.healthitcertification.com)



# Margret A

## Margret\A Consulting, LLC

*Strategies for the digital future of healthcare information*

- Information management and systems consultant, focusing on electronic health records and their value proposition
- Adjunct faculty, College of St. Scholastica; former positions with CPRI, AHIMA, Univ. of Ill., IEEI
- Active participant in standards development
- Speaker and author (Silver ASHPE Awards for “HIPAA on the Job” column in *Journal of AHIMA*)

- **Strategic IT planning**
- **Compliance assessments**
- **Work flow redesign**
- **Project management and oversight**
- **ROI/benefits realization**
- **Training and education**
- **Vendor selection**
- **Product/ market analysis**

# Steve Lazarus

## Boundary Information Group

*Strategies for workflow, productivity, quality and patient satisfaction improvement through health care information*

- Business process consultant focusing on electronic health records, and electronic transactions between organizations
- Former positions with MGMA, University of Denver, Dartmouth College
- Active leader in the Workgroup for Electronic Data Interchange (WEDI)
- Speaker and author (two books on HIPAA Security and one forthcoming on electronic health record)
- Co-Founder of Health IT Certification

- **Strategic IT business process planning**
- **ROI/benefits realization**
- **Project management and oversight**
- **Workflow redesign**
- **Education and training**
- **Vendor selection and enhanced use of vendor products**
- **Facilitate collaborations among organizations to share/exchange health care information**



# Health IT Certification Faculty

- Margret Amatayakul, MBA, RHIA, CHPS, FHIMSS
- Bill Braithwaite, MD, PhD
- Ted Cooper, MD
- Steven S. Lazarus, PhD, FHIMSS
- Rosemarie Nelson, MS
- Paul T. Smith, Esq.
- Adele A. Waller, Esq.



# Health IT Certification Advisory Board

- Mark R. Anderson, CPHIMS, FHIMSS
- W. Holt Anderson
- Garry Carneal, MA, JD
- Peter N. Grant, JD, PhD
- John D. Halamka, MS, MD
- John Iglehart
- William F. Jessee, MD, ACMPE
- Ronald B. Kuppersmith, MD, MBA, FACS



# Health IT Certification Advisory Board

- Janet Marchibroda
- Blackford Middleton, MD, MPH, MSc
- Ian Morrison, PhD
- Lawrence Pawola, PharmD, MBA
- Jeff Rideout, MD, MA
- Dennis J. Streveler, PhD
- L. Carl Volpe



# EHR/HIT Courses

- I. Overview of HIT
- II. Principles of EHR
- III. EHR Migration Path
- IV. Planning for EHR
- V. Legal and Regulatory Aspects
- VI. Managing EHR ROI
- VII. EHR Systems Selection
- VIII. EHR Implementation Support
- **IX. CPOE and E-Prescribing**
- **X. Emerging HIT Infrastructure**





# Agenda

1. IX. CPOE and e-prescribing
2. X. Emerging HIT infrastructure



# IX. CPOE and E-Prescribing



# Objectives

- Upon completion of this course, participants will be able to:
  - Identify the importance of CPOE and e-prescribing for patient safety.
  - Establish the contexts in which CPOE and e-prescribing are implemented.
  - Describe the cooperation, coordination, and connectivity required to overcome challenges and achieve meaningful CPOE and e-prescribing.
  - Discuss electronic medication administration and pharmacy support systems that complement CPOE and e-prescribing.
  - Identify and prepare to continuously monitor national initiatives.

# Topics

Part 1. Patient Safety

Part 2. Context of CPOE and E-Prescribing  
within Health Information  
Technology

Part 3. Challenges in CPOE and E-  
Prescribing

Part 4. National Initiatives

# IX. CPOE and E-Prescribing

## Part 1. Patient Safety



# Content Part 1.

- The Driving Factor
- IOM Recommendations
- Subsequent Actions on Patient Safety
- Patient Safety Elements
- Non-Medication Errors
- Medication Use Processes Contributing to Errors
- Cost of Errors
- Public Perceptions

# The Driving Factor



# IOM Recommendations

- Fragmentation
- Reimbursement
- Liability
- Accreditation





# IOM Recommended Approaches

- National focus
- Learn from errors/reporting
- Raising standards
- Safety systems in healthcare organizations

Quality Chasm

Series

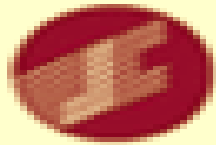


# THE LEAPFROG GROUP

for Patient Safety  
Rewarding Higher Standards

- Reduce preventable medical mistakes and improve the quality and affordability of health care.
- Reward doctors and hospitals for improving the quality, safety and affordability of health care.
- Encourage public reporting of health care quality and outcomes so that consumers and purchasing organizations can make more informed health care choices.
- Help consumers reap the benefits of making smart health care decisions.





**Joint Commission**

*on Accreditation of Healthcare Organizations*

## Our Commitment to Patient Safety

Patient safety-related standards

Sentinel Event Policy

Sentinel Event Alert

Sentinel Event Advisory Group

National Patient Safety Goals

The Universal Protocol

Office of Quality Monitoring

Patient safety resources

The Speak Up initiatives

Legislative efforts

Patient safety coalitions





*Agency for Healthcare Research and Quality*

*Advancing Excellence in Health Care*

## Medical Errors & Patient Safety

The very critical issues of medical errors and patient safety have received a great deal of attention. In November 1999, the Institute of Medicine (IOM) released a report estimating that as many as 98,000 patients die as the result of medical errors in hospitals each year.

A major Federal initiative has been launched to reduce medical errors and improve patient safety in federally funded health care programs, and by example and partnership, in the private sector.

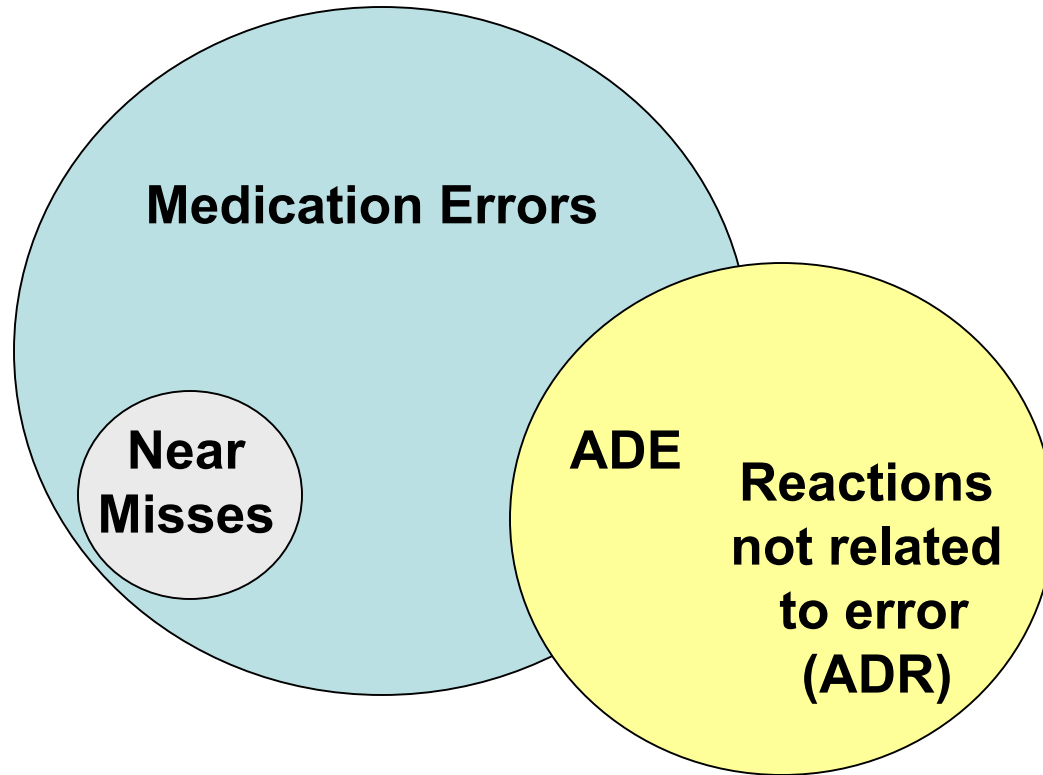
### Patient Safety Improvement Corps

*Providing knowledge and skills to teams of State field staff and hospital partners selected by States*

*Subscribe: AHRQ's Patient Safety E-newsletter*



# Patient Safety Elements



# Medication Error

- “The failure of a planned action to be completed as intended (i.e., error of execution) or the use of a wrong plan to achieve an aim (i.e., error of planning).”  
– *To Err Is Human*

# Adverse Drug Event

- “An injury caused by medical management rather than by the underlying disease or condition of the patient.”
  - *To Err Is Human*
- **AS DISTINGUISHED FROM:**
  - Adverse drug reaction, that is unanticipated and generally not preventable
  - Side effect, which is known (and often expected)

# Non-Medication Errors

- **Diagnostic:**
- Error or delay in diagnosis
- Failure to employ indicated tests
- Use of outmoded tests or therapy; not using documented “best practices”
- Failure to act on results of monitoring or testing
- **Treatment:**
- Error in performance of an operation, procedure, or test
- Error in administering treatment
- Avoidable delay in treatment or in responding to abnormal test
- Inappropriate (not indicated) care
- **Preventive:**
- Failure to provide prophylactic treatment when appropriate
- Inadequate monitoring or follow-up of treatment
- **Other:**
- Failure of communication
- Equipment failure



# Medication Use Processes Contributing to Errors

- **Prescribing:**
- Assessing the need for and selecting the correct drug
- Individualizing the therapeutic regimen and designating the desired therapeutic response
- Communicating expectations to the patient
- **Dispensing:**
- Reviewing and process the order
- Compounding and preparing the drug
- Dispensing the drug in a timely manner
- **Administering:**
- Administering the right medication to the right patient when indicated
- Informing the patient about the medication and including the patient in administration
- **Monitoring:**
- Monitoring and documenting patient's response
- Identifying and reporting adverse drug events
- Reevaluating drug selection, regimen, frequency, and duration
- **Systems and Management Control:**
- Collaborating and communicating among caregivers
- Reviewing and managing patient's complete therapeutic drug regimen

# Preventing Medication Errors

## Common Factors in Medication Errors:

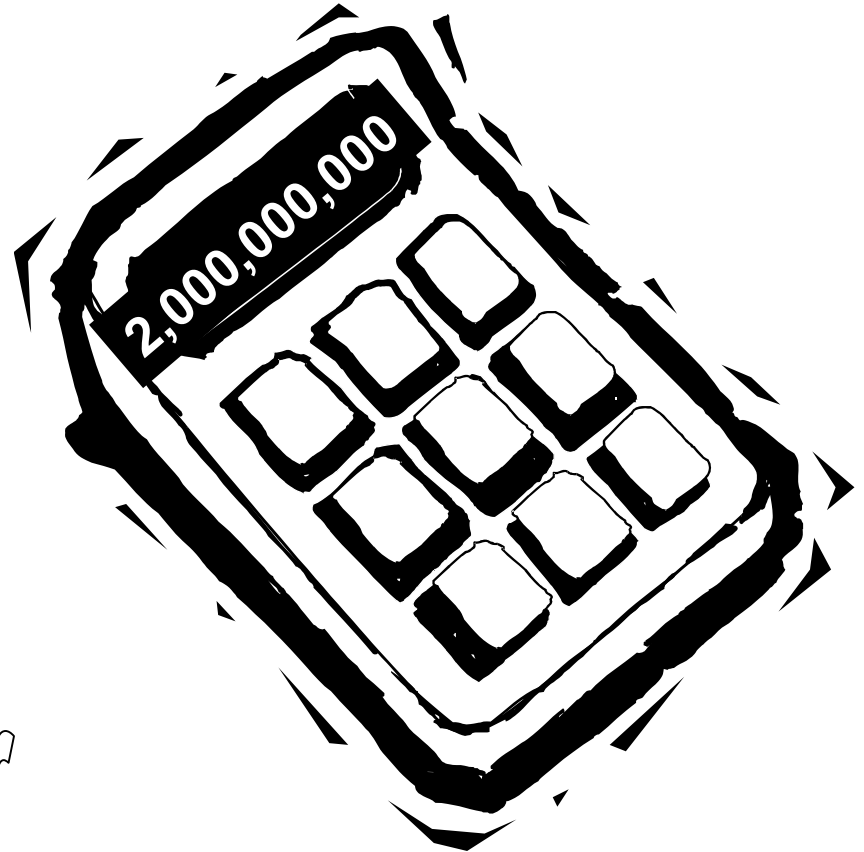
- Decline in renal or hepatic function requiring alteration of drug therapy
- Patient history of allergy to the same medication class
- Using the wrong drug name, dosage form, or abbreviation
- Incorrect dosage calculations
- Atypical or unusual and critical dosage frequency considerations
- Incomplete orders/prescriptions and illegible handwriting

## Process Improvement Efforts to Reduce Errors:

- Knowledge and the application of knowledge regarding drug therapy
- Knowledge and use of knowledge regarding patient factors that affect drug therapy
- Use of calculations, decimal points, or unit and rate expression factors
- Nomenclature, for example, incorrect drug name, dosage form, or abbreviations

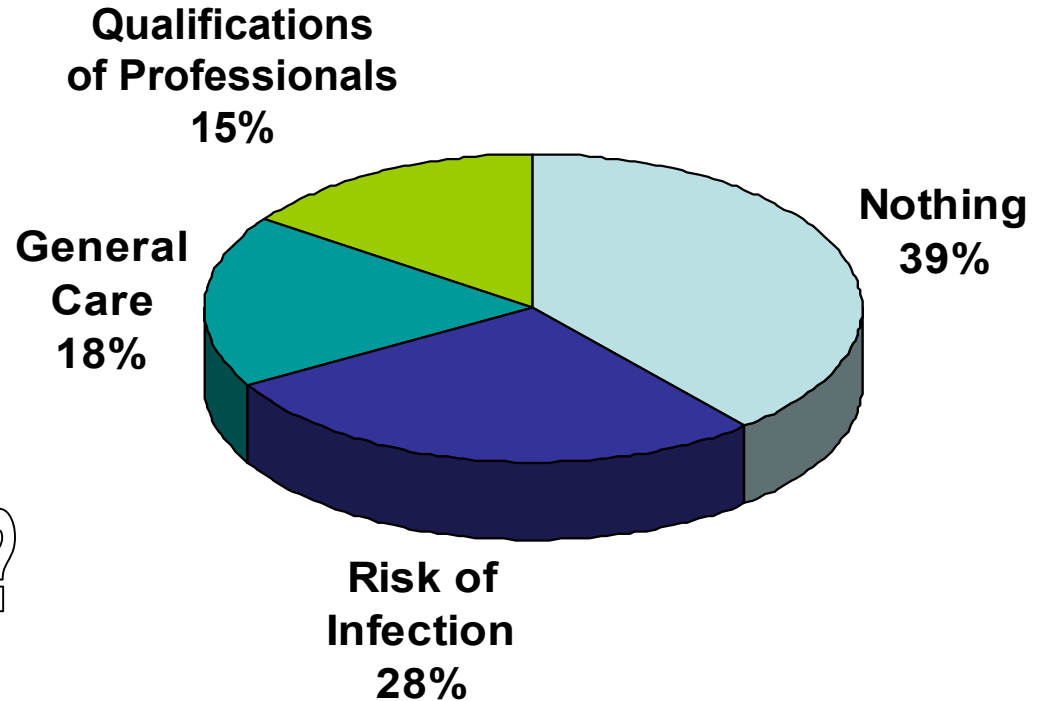
# Cost of Errors

\$1 on meds =  
\$1 to treat error



# Public Perceptions

What comes to mind  
when you think  
about patient safety?



# IX. CPOE and E-Prescribing

## Part 2. Context of CPOE and E- Prescribing in HIT



# Content Part 2.

- Scope of HIT Addressing Medication Errors
- Current Medication Ordering Process
- Medication Error Improvement through HIT
- CPOE vs. E-Prescribing
- E-Prescribing Defined
- Prescription Transactions
- Levels of E-Prescribing
- E-Prescribing Adoption Rates
- E-Prescribing Stakeholders
- E-Prescribing Cost Savings
- E-Prescribing Incentives



# Scope of HIT Addressing Medication Errors

- Laboratory information system (LIS)
- Clinical decision support (CDS)
- Alerts engine
- Computerized provider order entry (CPOE)
- Pharmacy information system (PIS)
- Automated dispensing devices (Rx)
- Nursing information system (NIS)
- Bar-code medication administration record (MAR)

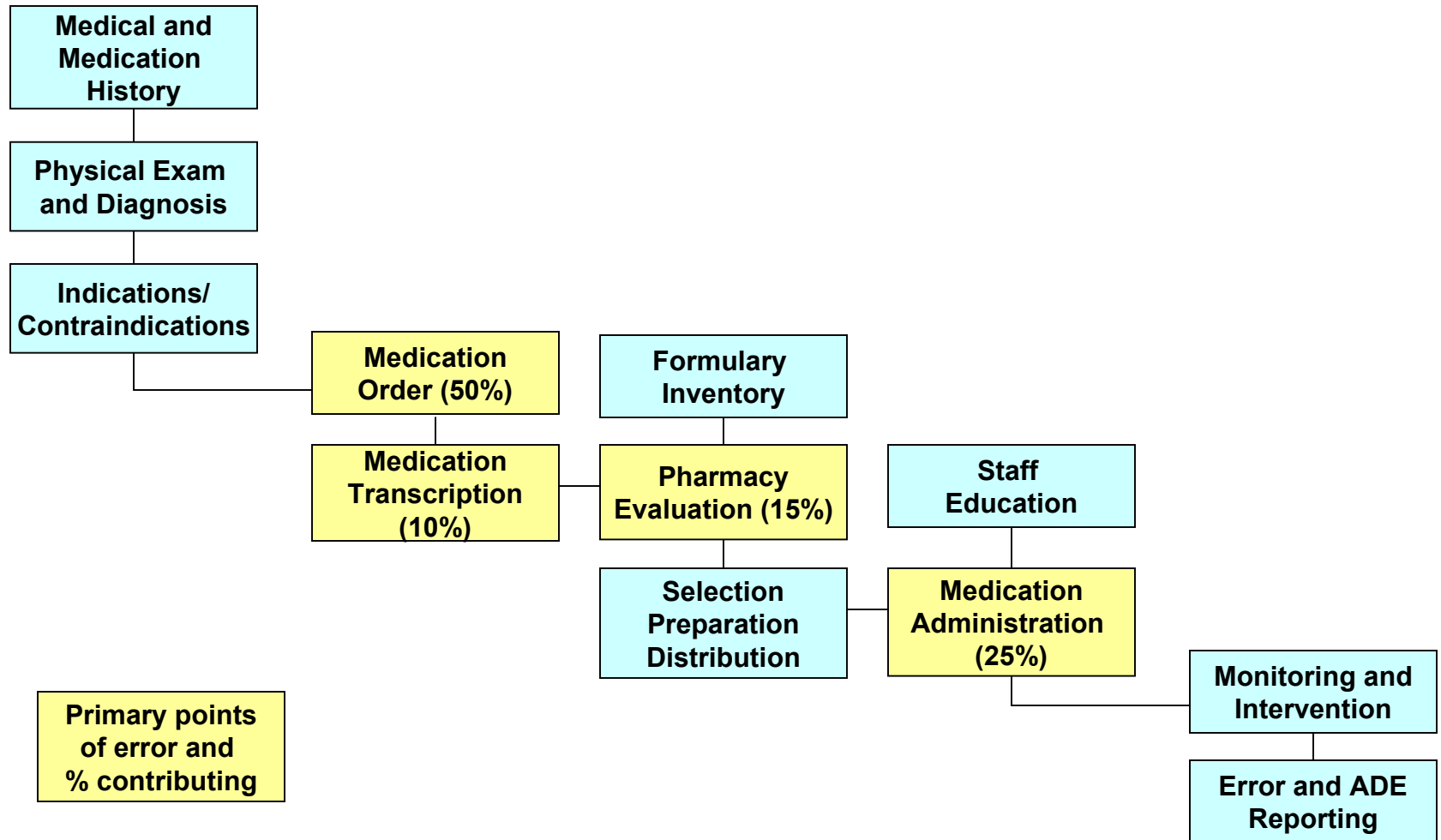
# Pharmacy Benefits Manager

A PBM adjudicates prescription drug claims, establishes formularies, tracks physician prescribing patterns, provides education to improve efficiency and cost effectiveness, and contributes information in support of disease management programs.



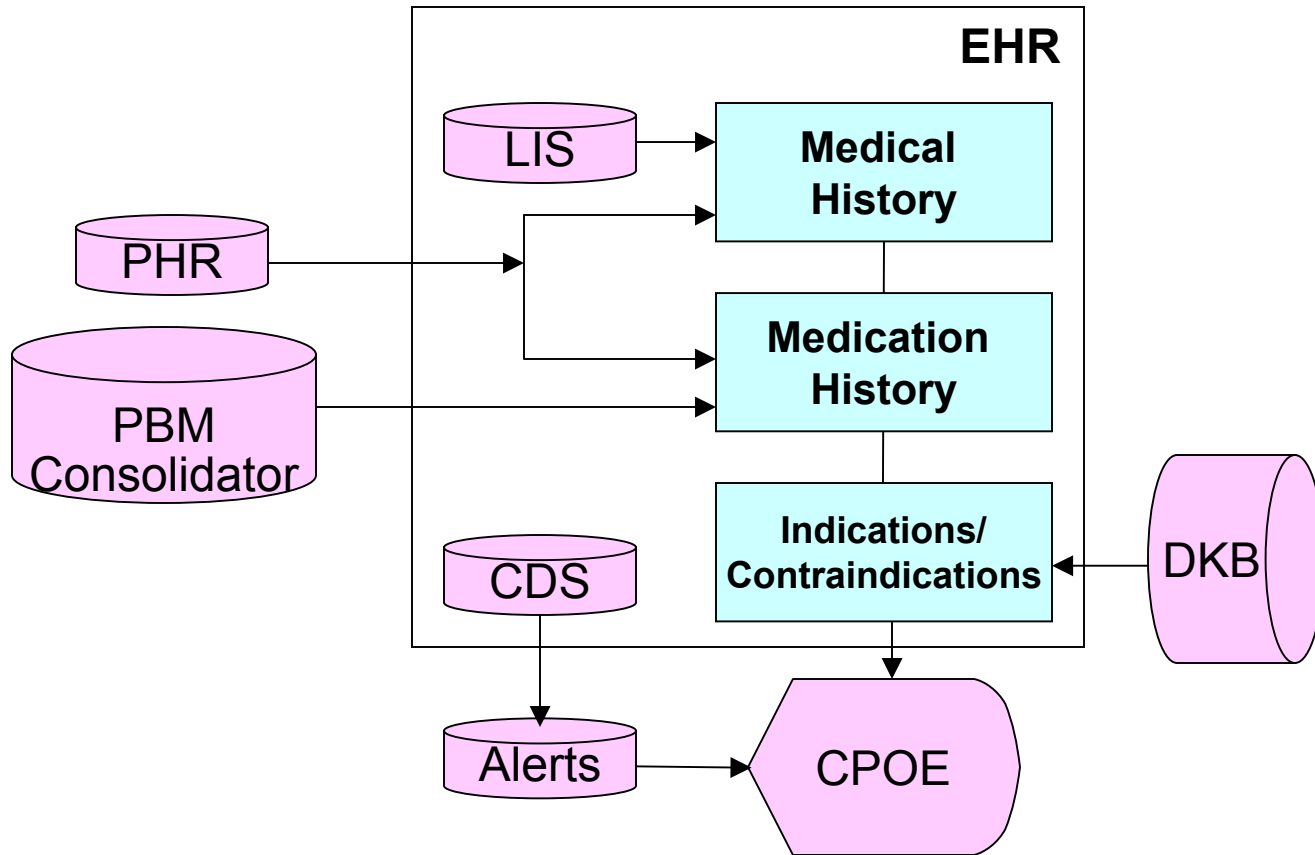


# Current Medication Process



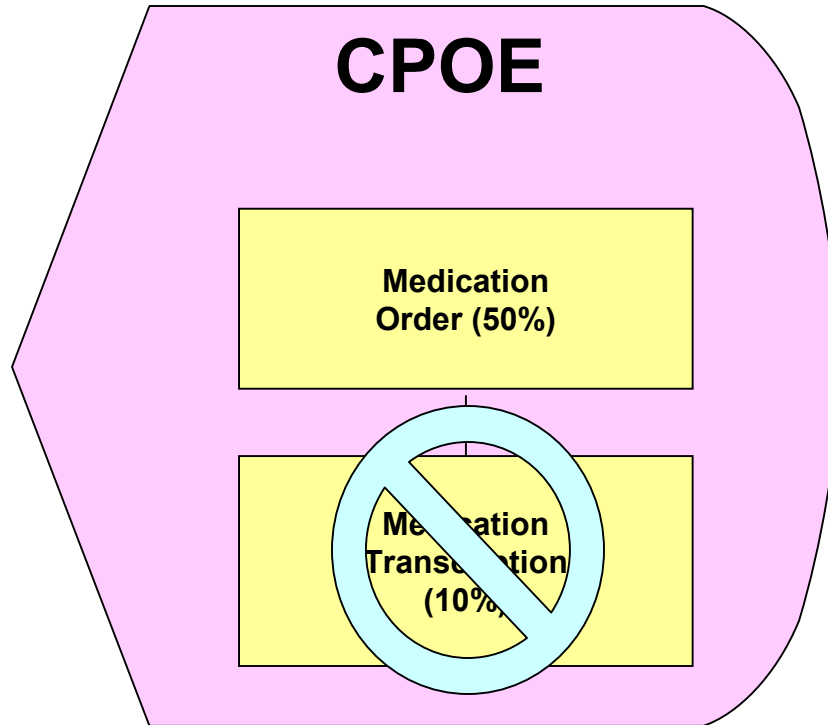
Estimates of error from Bates et al. Incidence of adverse drug events in hospitalized patients. *JAMA* 1995;274:29-34

# Medication Management

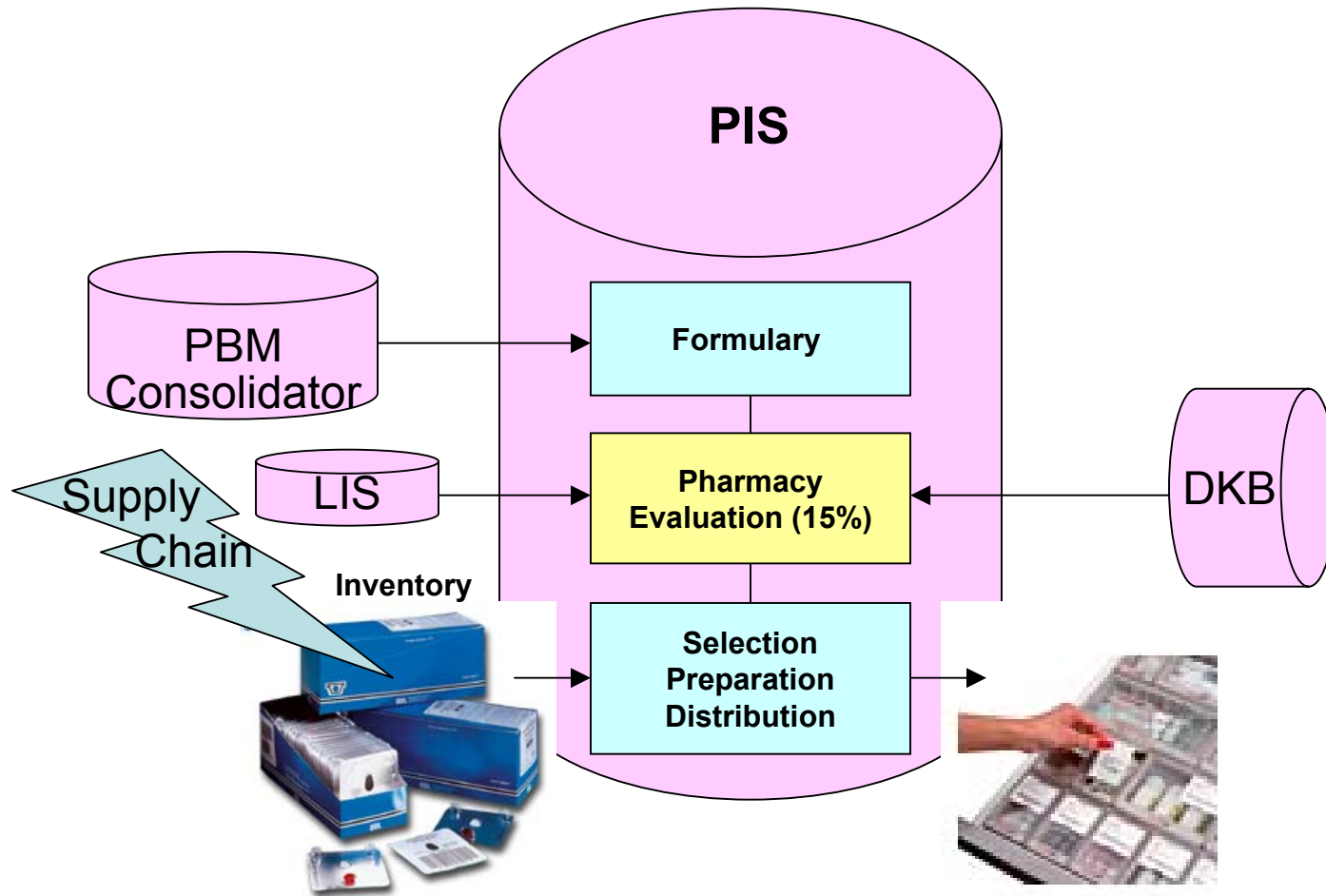


Used with permission, MargretVA Consulting, LLC

# CPOE

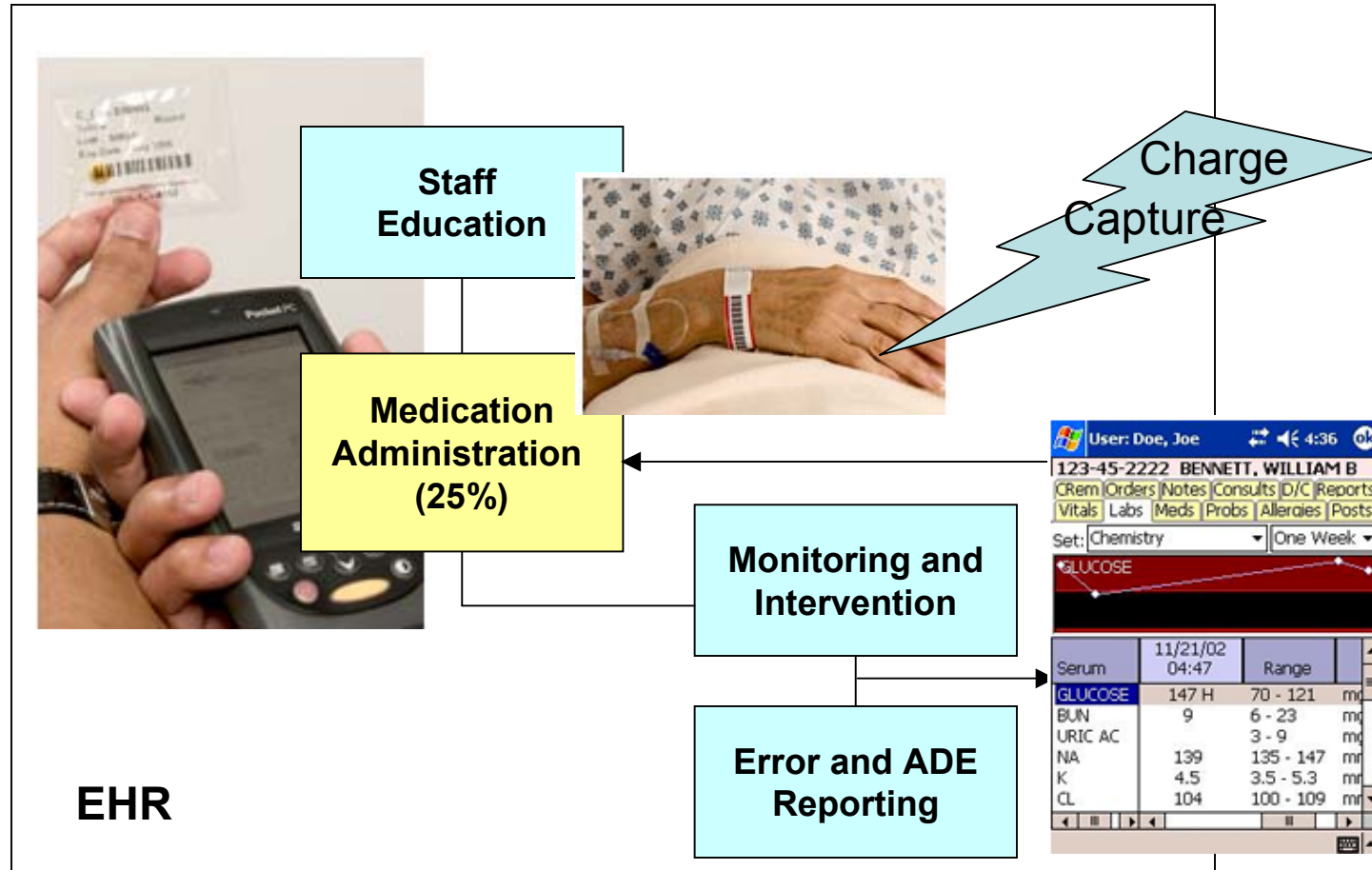


# Pharmacy Management



Used with permission, MargretVA Consulting, LLC

# HIT for Medication Management



Used with permission, MargaretA Consulting, LLC

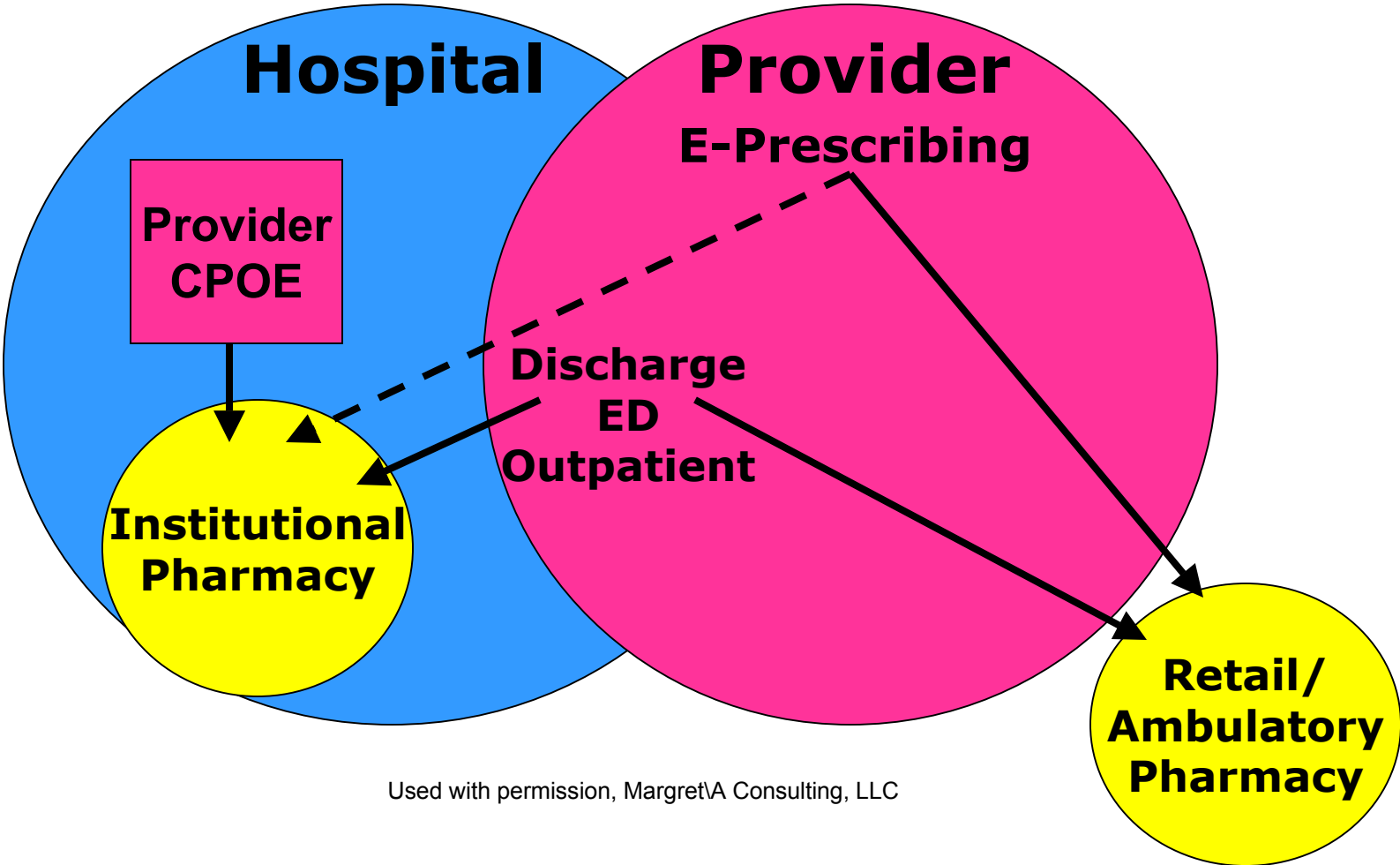
# Five Rights

## Medication Administration

- **Right** patient
- **Right** drug
- **Right** time
- **Right** dose
- **Right** route

*Institute for Safe  
Medication Practices*

# CPOE vs. E-Prescribing



Used with permission, MargaretA Consulting, LLC

# E-Prescribing Definition

One Hundred Eighth Congress  
of the  
United States of America

AT THE FIRST SESSION

*Began and held at the City of Washington on Tuesday,  
the seventh day of January, two thousand and three*

## An Act

To amend title XVIII of the Social Security Act to provide for a voluntary program for prescription drug coverage under the Medicare Program, to modernize the Medicare Program, to amend the Internal Revenue Code of 1986 to allow a deduction to individuals for amounts contributed to health savings security accounts and health savings accounts, to provide for the disposition of unused health benefits in cafeteria plans and flexible spending arrangements, and for other purposes.

*Be it enacted by the Senate and House of Representatives of  
the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE; AMENDMENTS TO SOCIAL SECURITY ACT;  
REFERENCES TO BIPA AND SECRETARY; TABLE OF CON-  
TENTS.

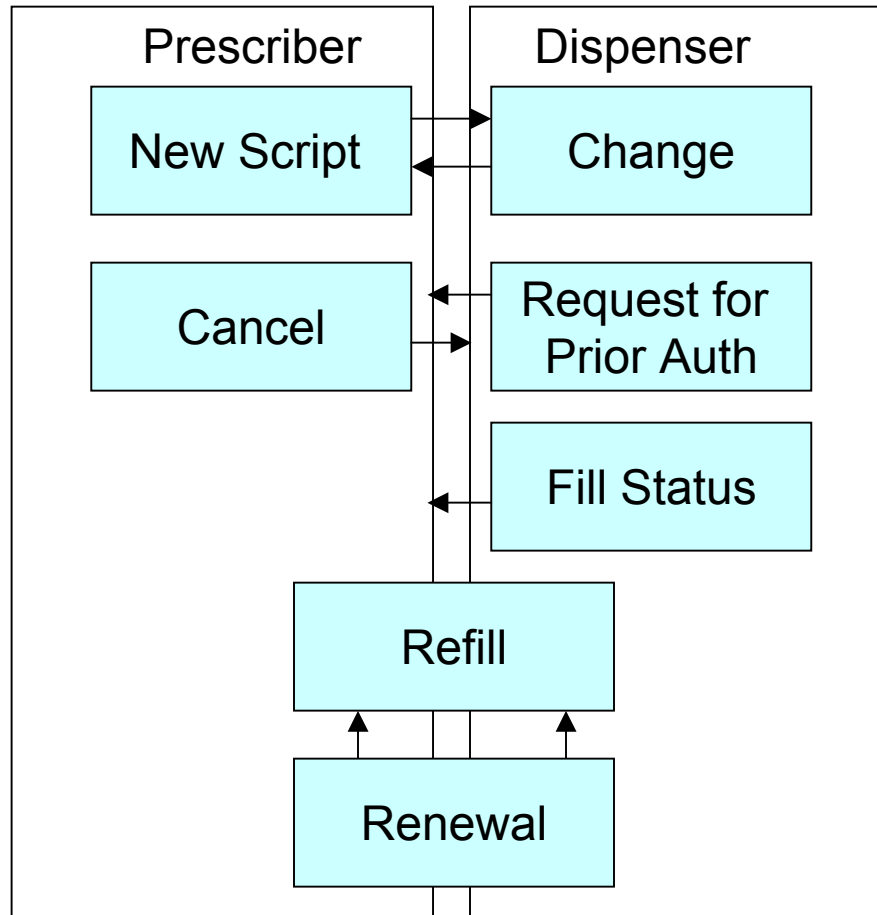
(a) SHORT TITLE.—This Act may be cited as the “Medicare  
Prescription Drug, Improvement, and Modernization Act of 2003”.

(b) AMENDMENTS TO SOCIAL SECURITY ACT. Except as otherwise

MMA



# Prescription Transactions



Used with permission, MargaretA Consulting, LLC

# New Prescriptions/Changes

- New 'script written by prescriber (physician or other authorized provider)
- Script reviewed by dispenser (pharmacist) and potential changes recommended:
  - Indications for different drug
  - Contraindications
  - Cost

# Other Transactions

- Prior authorization
- Cancel
- Fill status notification



# Refill/Renewal

**Refill = original prescription may be filled again**

**Renewal = issuing the same prescription again**



# E-Prescribing Systems

**6. Integration with EHR**

**5. Connectivity: MDs office, pharmacy, PBM and intermediaries**

**4. Medication Management: Prior medications are available for renewal, interaction checks, etc.**

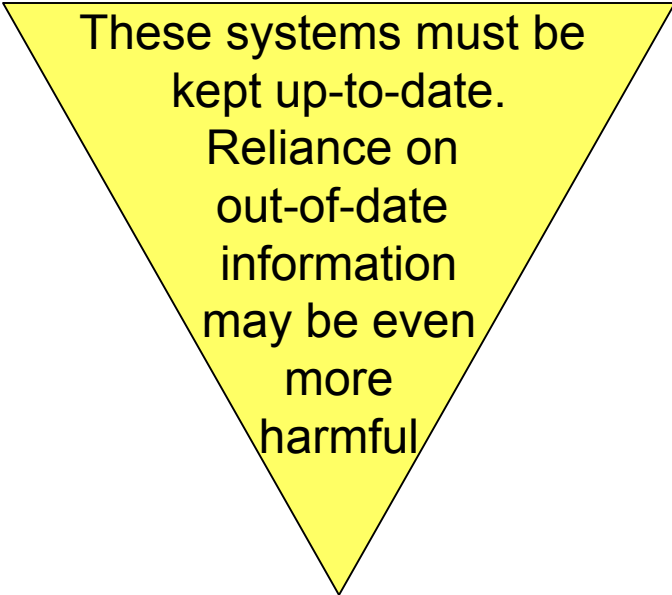
**3. Supporting patient data is included: Demographics, allergy, formulary, and/or payer information**

**2. Standalone Prescription Writer: Search by drug name and create prescription; no long-term data about patient accessible**

**1. Basic electronic reference only: Drug information, dosing calculators, formulary information available, but not automatically shown**

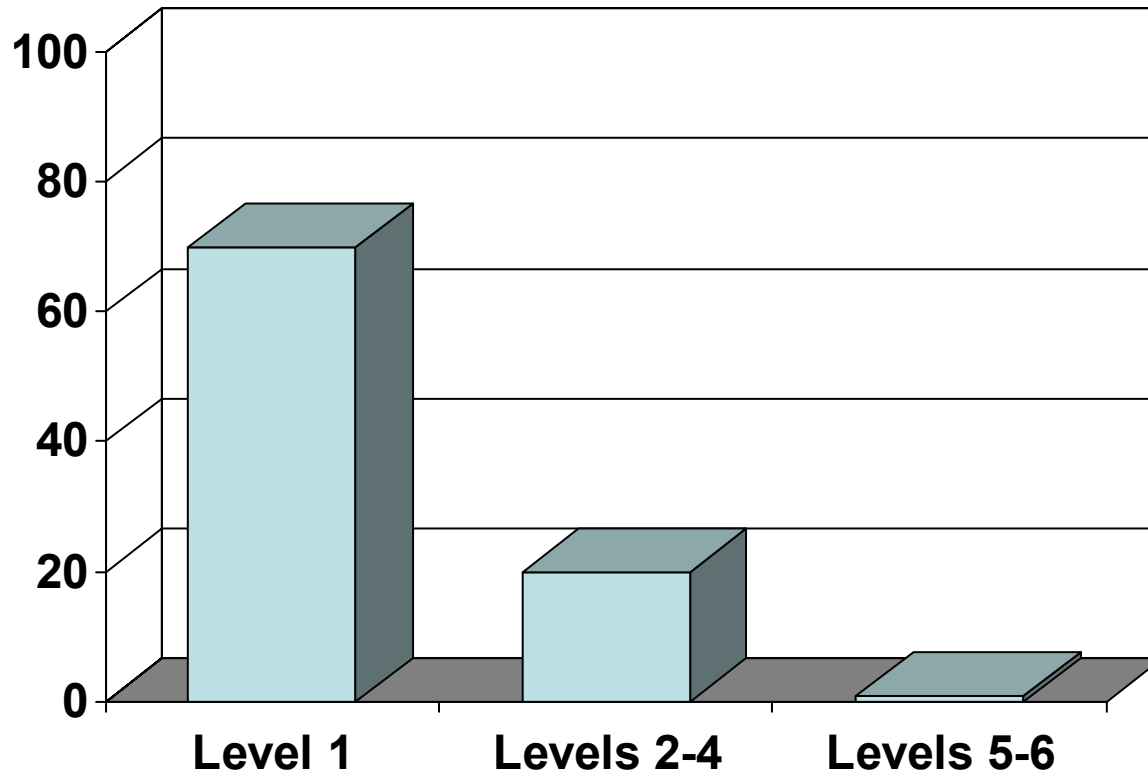
# Levels of E-Prescribing

1. Electronic prescription reference
2. Standalone prescription writer
3. Patient-specific prescription creation
4. Medication management
5. Connectivity
6. Integration with EHR



These systems must be kept up-to-date. Reliance on out-of-date information may be even more harmful.

# E-Prescribing Adoption Rates



# E-Prescribing Stakeholders

- Patients
- Prescribers
- Dispensers
- Health plans

More than 3 billion prescriptions are written annually in the U.S., and used by 65 percent of all persons in the U.S.

Some estimate that with telephone tag and refills, the percent of calls between prescribers and dispensers is actually 30 to 40 percent of all prescriptions written.



# Cost-Savings and Incentives

\$27 B Savings

---

\$154 B Total Cost

of Prescriptions

\$2 B in ADE

Savings

**Providers get:**

- **Reduced risk**
- **Reduced hassles (primarily for staff and patients)**

# IX. CPOE and E-Prescribing

## Part 3. Challenges in CPOE and E-Prescribing

# Content Part 3.

- CPOE Challenges
- CPOE Lessons Learned
- CPOE System Requirements
- Additional Benefits/Challenges
- Monitoring and Reporting
- Adoption of E-Prescribing
- Integrating CPOE and E-Prescribing

# CPOE Challenges

- Resistance from medical staff
- Lack of management commitment for support
- Cost of system
- Ability of incumbent vendor to support
- Lack of technical infrastructure (e.g., insufficient workstations, bandwidth)
- Cookbook medicine as a result of rules (will rules be followed blindly?)
- Too many warnings (who decides what warnings are appropriate?) Old warnings (who keeps them up-to-date?)
- Lack of human infrastructure support (e.g., informatics expertise)

# CPOE Lessons Learned

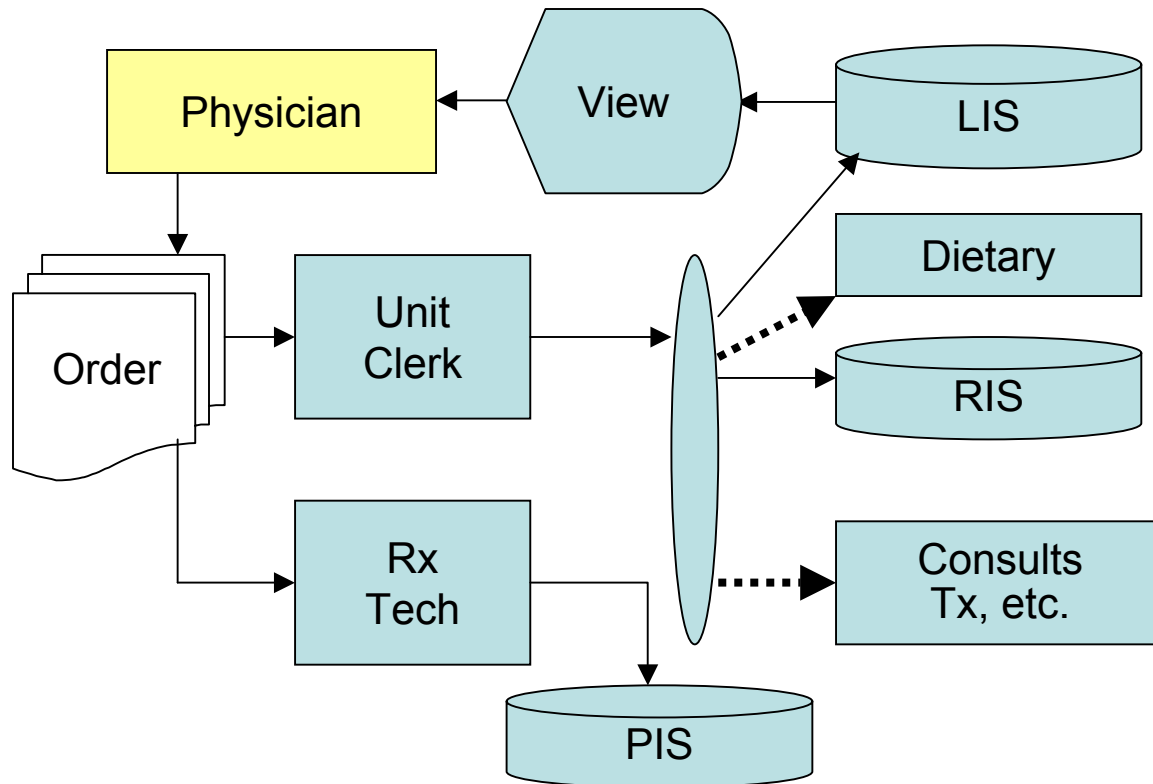
People

Policies

Processes

# CPOE System Requirements

Figure 1



Used with permission, MargaretA Consulting, LLC

# CPOE System Requirements

Figure 2

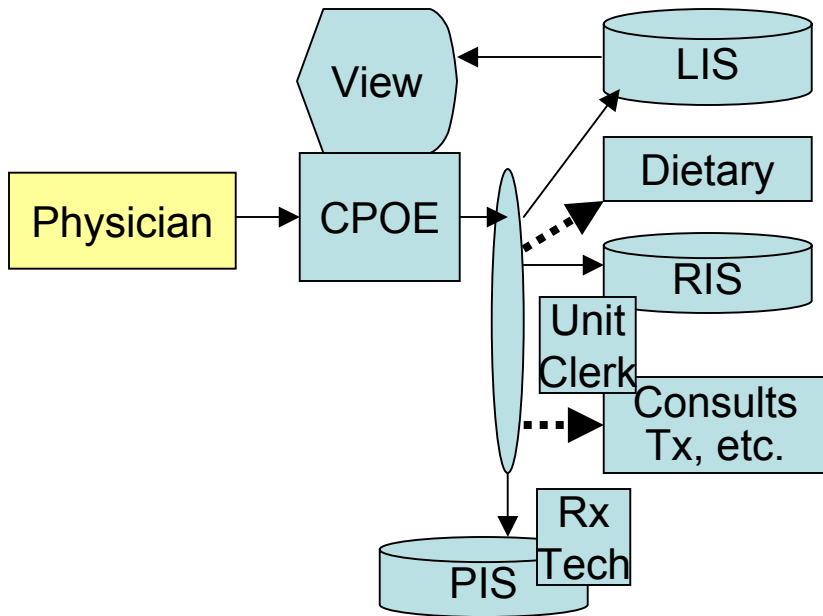
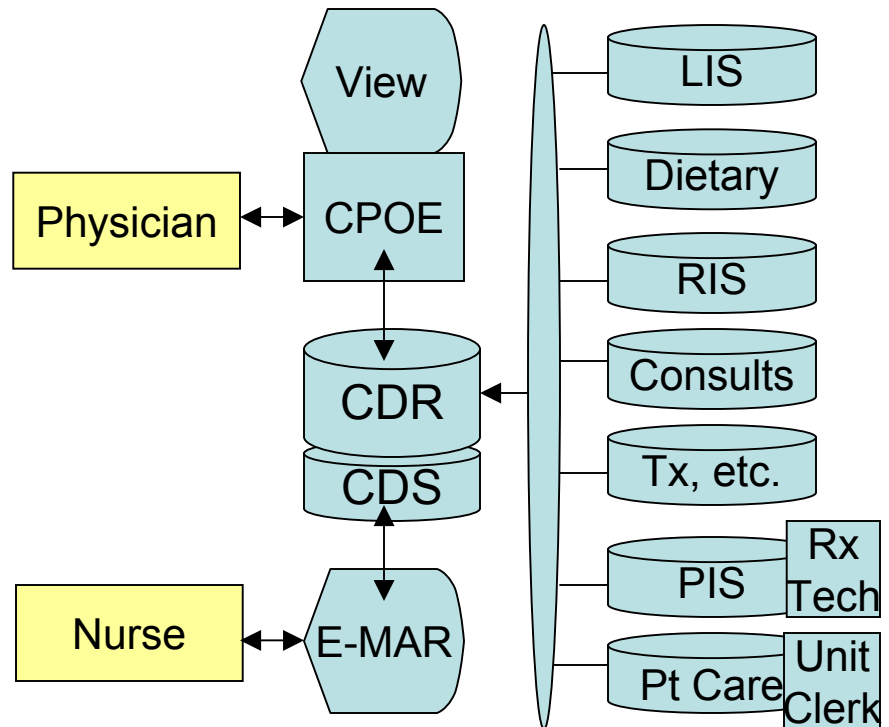


Figure 3



Used with permission, MargretVA Consulting, LLC

# Other Stakeholders

Rx  
Tech

- Pharmacy technicians

Unit  
Clerk

- Unit clerks



# CPOE System Recommendations

- Engage physicians early in the planning process
- Study workflow, map processes, plan for/manage change
- Ensure sufficient information system infrastructure.
- Ensure human-computer interface ubiquity
- Pilot (and pilot some more) until all bugs are out
- “Swarm” users with support
- Ask for feedback
- Measure
- Celebrate

People, policy, and process are #1

# Additional Benefits

- Decreased verbal orders with operational cost savings
- Bed turnover
- Data mining for better monitoring
- Improved quality
- Enhanced Compliance



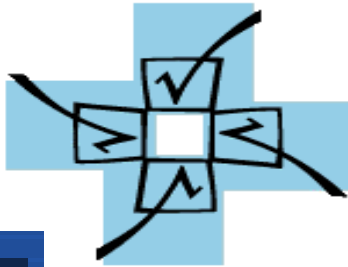
# Challenges in CPOE

- Pharmacy workload increases
- Workarounds
- Completeness of data as it supports clinical decision systems
- Monitoring and reporting efforts

Anticipate an "increase" in medication errors.

Heightened attention to the process will necessarily recognize more errors that have always been in the system but never counted.

# Monitoring and Reporting



► Welcome to the NCC MERP web site  
National Coordinating Council for Medication Error

**National Coordinating Council  
for Medication Error  
Reporting and Prevention**



Formation of the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) was spearheaded by the U.S. Pharmacopoeia (USP), the Institute for Safe Medication Practices (ISMP), and other leading national healthcare organizations. NCC MERP has developed a Taxonomy of Medication Errors for safe and consistent reporting.

# Adoption of E-Prescribing



**Patient Selection**  
**Documentation Views**  
**Medication Summary**  
**Allergy Summary**  
**Patient Diagnoses**  
**Lab Results**  
**Vital Signs**  
**View Current and historical  
treatment orders**  
**Access Email**  
**Manage schedule and appointments**  
**Access online resources and tools**

# Implementation Plan for E-Prescribing

1. Establish expectations
2. Gain commitment
3. Develop detailed project plan
4. Construct system
5. Train staff
6. Monitor for improvement

# IX. CPOE and E-Prescribing

## Part 4. National Initiatives



# Content Part 4.

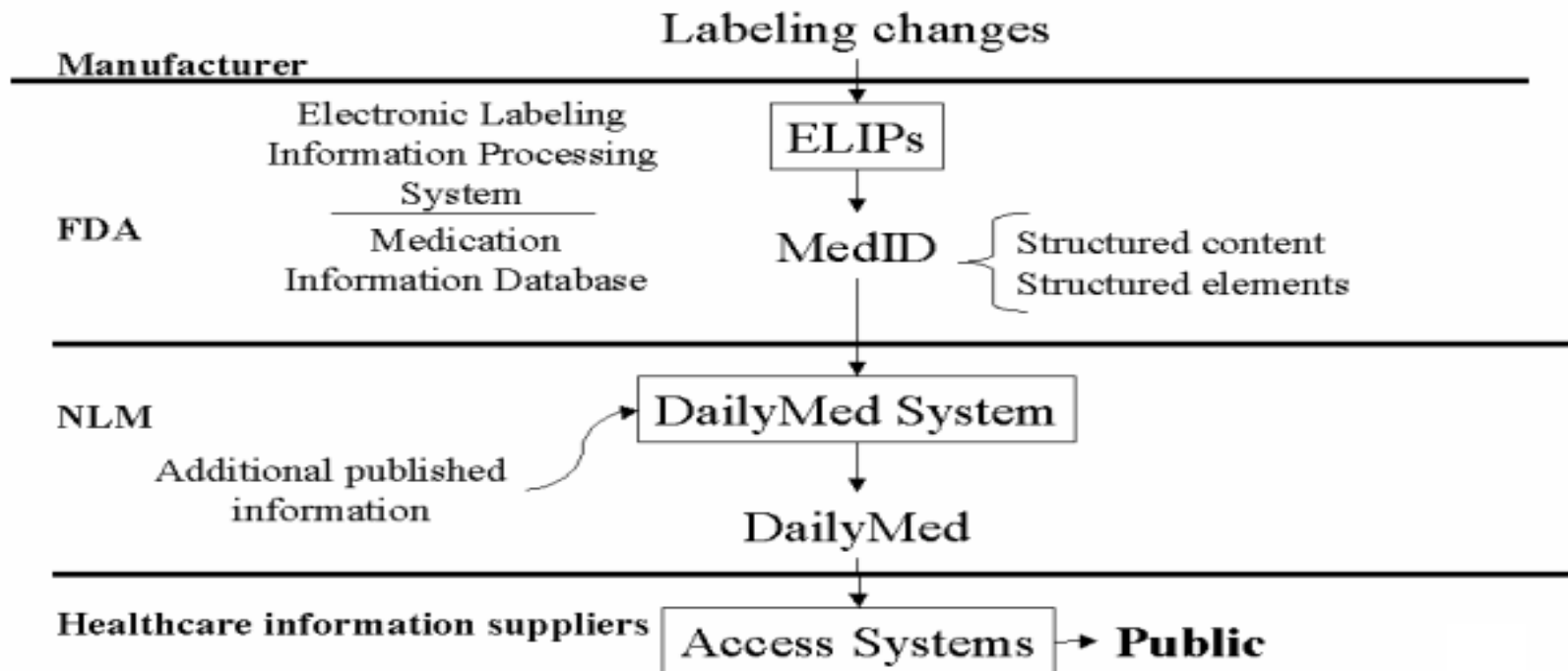
- FDA and NLM Initiatives
- NCVHS Recommendations for Standards under MMA
- Standards Harmonization Efforts





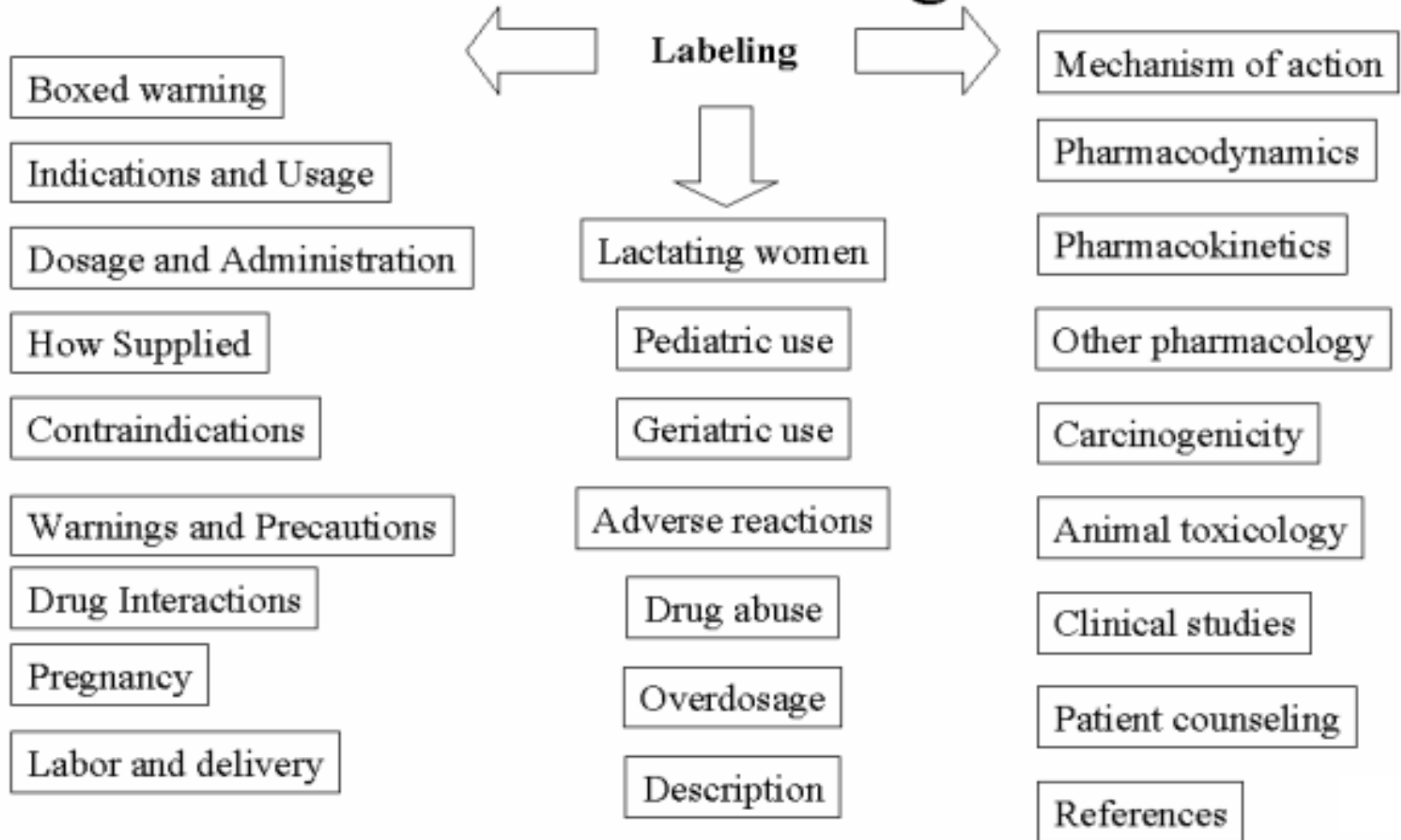
# FDA and NLM Initiatives

## Getting Information to the Public



**SIG** (from L. *signatura*) – patient instructions for taking medications placed at the end of a prescription written by a prescriber.

# Structured Labeling Content



# Daily Med

- Medication information in computer readable form
  - Easy import into information system
- Comprehensive
  - Includes all US marketed products
- Reliable
  - Information directly from labeling
- Up to date
  - New information or changes added daily
- Free
  - Distributed by National Library of Medicine

# National Standards



- Messaging standards
- Signature standards
- Vocabulary standards
- Harmonization



# Messaging Standards

- NCPDP SCRIPT
- ASC X12N 270/271, 278
- National Provider Identifier



# Signature Standards

## Electronic Signatures in Global and National Commerce Act



FEDERAL TRADE COMMISSION  
Bureau of Consumer Protection

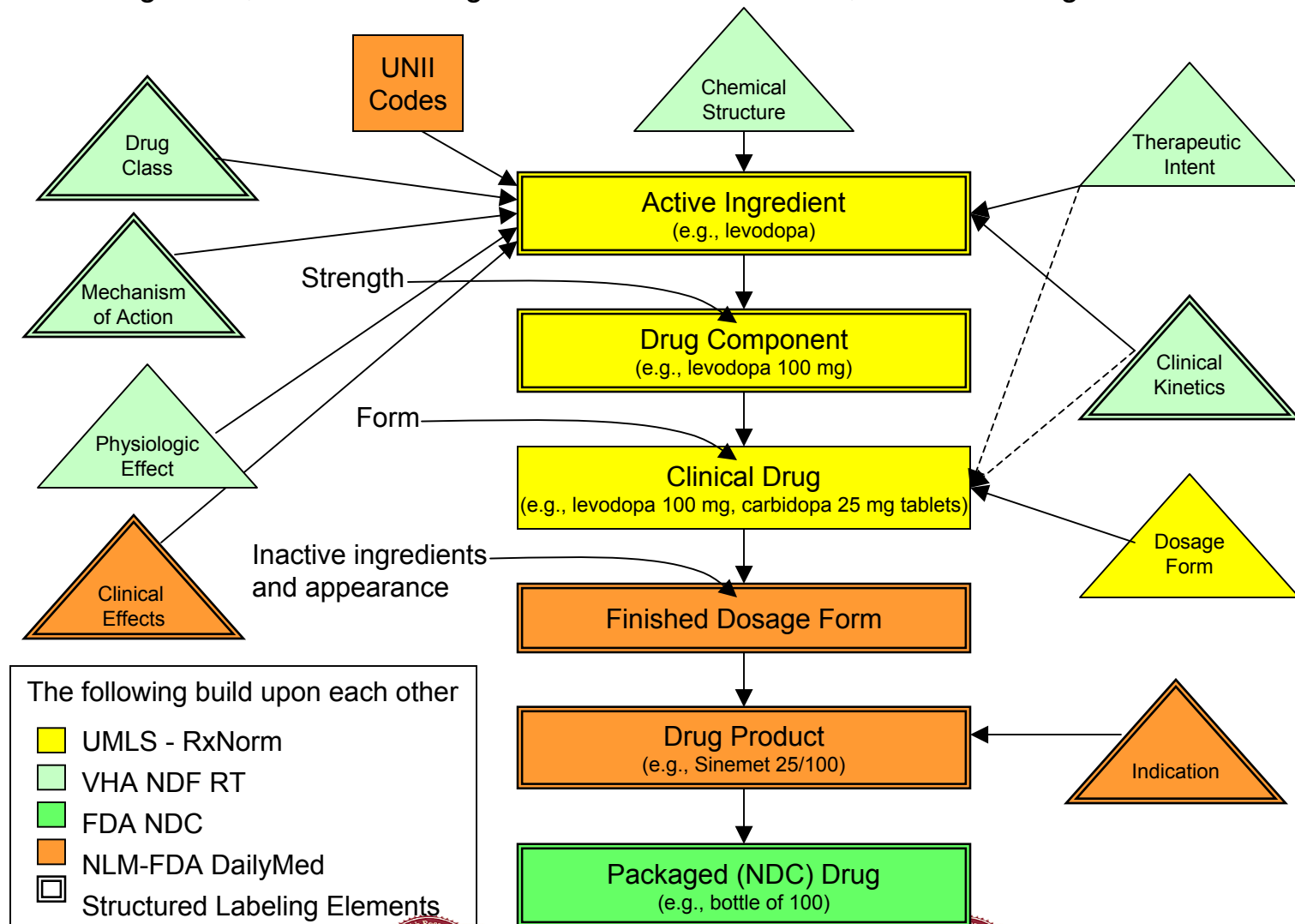


DEPARTMENT OF COMMERCE  
National Telecommunications and  
Information Administration

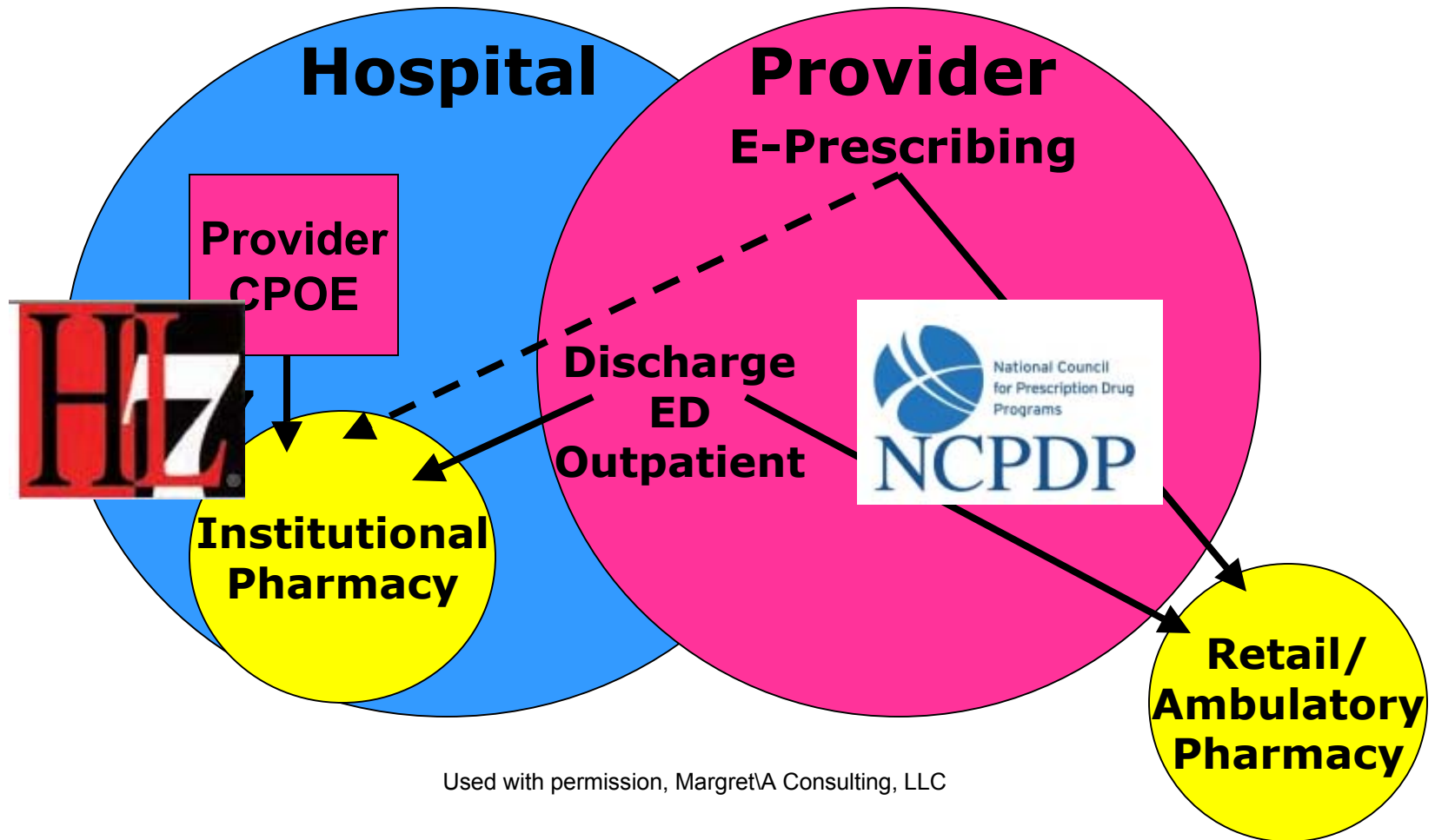
“An electronic sound, symbol, or process, attached to or logically associated with a contract or other record and executed or adopted by the person with the intent to sign the record”

# Vocabulary Standards

Adapted from U.S. Government Drug Terminology, Randy Levin, MD, Director, Office of Information Management, Center for Drug Evaluation and Research, Food and Drug Administration



# Standards Harmonization



Used with permission, MargretVA Consulting, LLC



# Emerging HIT Infrastructure

## Course X. Core Content for CPHIT



# Objectives

- Upon completion of this course, participants will be able to:
  - Discuss the growing momentum for a more coordinated and integrated approach to using health information
  - Identify and describe emerging standards to support exchange of data across the continuum of care
  - Describe new relationships within the health care industry that support patient safety, quality, and cost initiatives
  - Review lessons learned from the international community

# Topics

Part 1. Exchange of Health Information  
Across the Continuum

Part 2. Health System Relationships

Part 3. International Lessons



# **X. Emerging HIT Infrastructure**

## **Part 1. Exchange of Health Information Across the Continuum**



# Content Part 1.

- National impetus
- ONCHIT programs
- CMS quality improvement initiatives
- Continuity of care record
- Personal health record
- Financial incentives



# National Impetus

- Institute of Medicine (IOM) patient record study, *The Computer-based Patient Record: An Essential Technology for Health Care*, 1991
- IOM medical errors report, ***To Err is Human: Building a Safer Health System***, November 1999
- National Committee on Vital and Health Statistics, *NHII - Information for Health: A Strategy for Building the National Health Information Infrastructure*, November 15, 2001
- Executive Order 13335 signed by President Bush on April 27, 2004 called for widespread adoption of interoperable electronic health records (EHRs) within 10 years and established the Office of the National Coordinator for Health Information Technology (ONCHIT)
- David J. Brailer, MD, PhD, National Coordinator, released ***The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care Framework for Strategic Action***, July 21, 2004



# ONCHIT HIT Programs

- Federal Health Architecture (FHA)
  - Consolidated Health Informatics (CHI)
- SNOMED and UMLS
- Request for Information on National Health Information Network
- Commission on Systemic Interoperability
- Certification Commission for Healthcare Information Technology

# Federal Health Architecture

- FHA will enable employment or migration of existing systems to meet citizen-centric business activities while providing clear rules for development of new tools for improved performance and access to health related information and services throughout the national health arena
- It is a multi-departmental business and technical architecture that facilitates:
  - Identification of collaborative business opportunities
  - Development of performance measurement and outcome strategy
  - Adoption of technical and data standards
  - Development of specifications for how to implement standards



DHS



VA



EPA



USDA



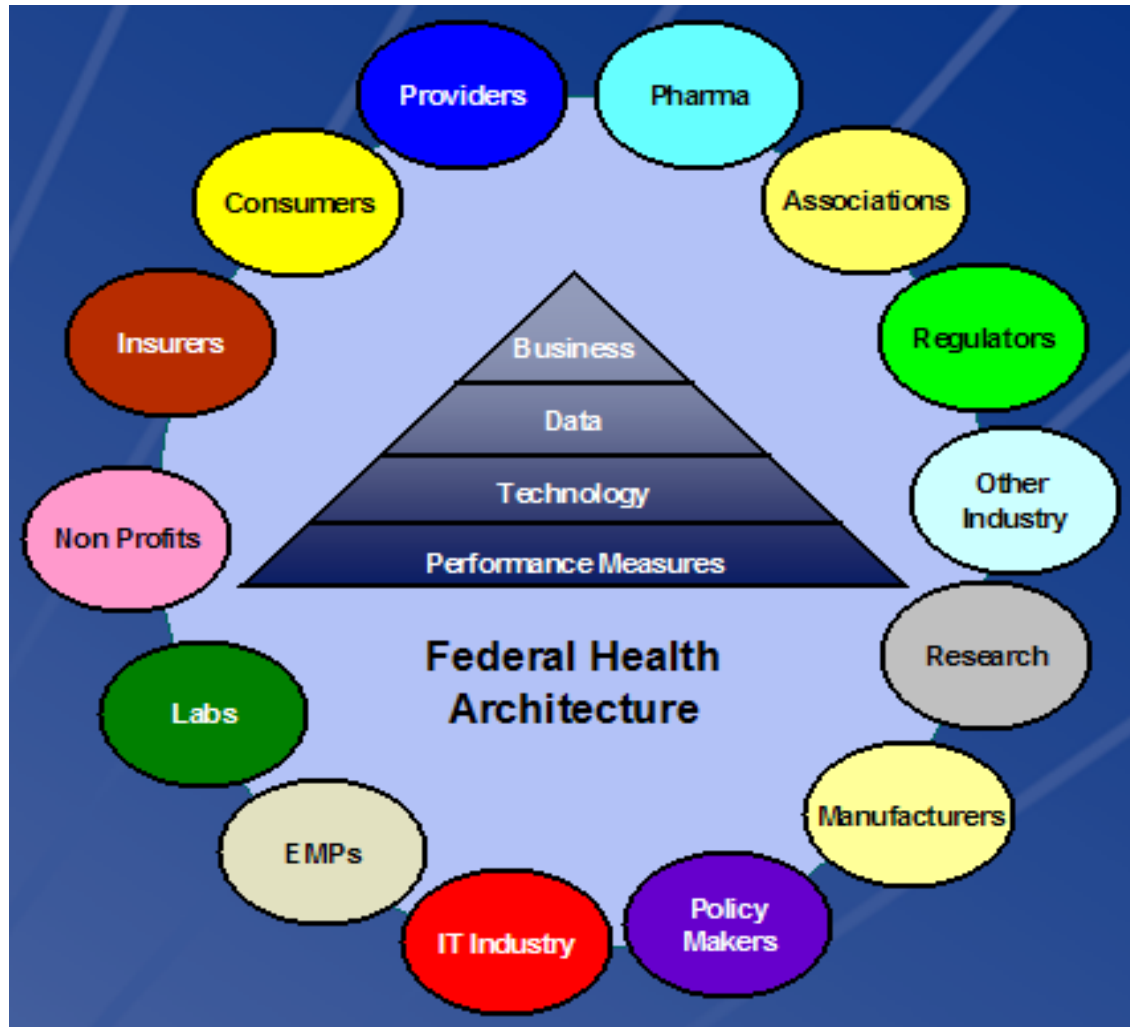
DOD



DOE



# Guiding Technology & Management Principles



# Consolidated Health Informatics



- **Federal agencies** with health-related missions need to share their health information to make significant strides towards improving patient safety, reducing error rates, lowering administrative costs, and strengthening national public health and disaster preparedness.
- The CHI initiative will establish a portfolio of existing clinical vocabularies and messaging standards enabling federal agencies to build interoperable federal health data systems. CHI standards will work in conjunction with the HIPAA transaction and code sets, privacy, and security provisions.
- Through the CHI governance process, all federal agencies will incorporate the adopted standards into their individual agency health data enterprise architecture used to build all new systems or modify existing ones. CHI conducts outreach to the private sector through the National Committee on Vital and Health Statistics ([www.ncvhs.hhs.gov](http://www.ncvhs.hhs.gov))





# SNOMED

- The NLM, on behalf of the Department of Health and Human Services, entered into an agreement with the College of American Pathologists (CAP) for a perpetual license for the core SNOMED CT (in Spanish and English) and ongoing updates. The terms of this license make SNOMED CT available to U.S. users at no cost through the UMLS Metathesaurus.
- NLM's Unified Medical Language System (UMLS) project develops and distributes multi-purpose, electronic "Knowledge Sources" and associated lexical programs for system developers
- SNOMED CT is a comprehensive clinical terminology formed by the convergence of SNOMED RT® and the United Kingdom's Clinical Terms Version 3 (formerly known as the Read Codes).
- SNOMED CT is one of a suite of designated standards for use in U.S. Federal Government systems for the electronic exchange of clinical health information. SNOMED CT is being implemented throughout the National Health Service (NHS) in the United Kingdom.



# RFI on NHIN

- ONCHIT identified that a significant barrier to adoption of EHR is interoperability, or the ability to exchange patient health information among clinicians and other authorized entities in real time and under stringent security, privacy and other protections.
- On November 15, 2004 ONCHIT released an RFI on NHIN to learn how widespread interoperability of health information technologies and health information exchange could be achieved through a NHIN. The RFI sought to learn about the multiple perspectives that can be brought to bear on NHIN. The comment period closed January 18, 2005
- [www.os.dhhs.gov/healthit/rfi.html](http://www.os.dhhs.gov/healthit/rfi.html)



# Commission on Systemic Interoperability

- Section 1012 of the Medicare Modernization Act required the Secretary of HHS to establish the Commission on Systemic Operability. It is charged with developing a comprehensive strategy for the adoption and implementation of health care information technology standards. Key to this is the establishment of priorities and a timeline for their operationalization.
- [www.os.dhhs.gov/healthit/commission.html](http://www.os.dhhs.gov/healthit/commission.html)



- A key action item in the Framework for Strategic Action needed to advance the goal of widespread adoption of HIT is a private sector certification of HIT products.
- In July 2004, CCHIT was formed by
  - American Health Information Management Association (AHIMA)
  - Healthcare Information and Management Systems Society (HIMSS)
  - The National Alliance for Health Information Technology
- A basic certification process on EHRs for physician offices is expected by summer of 2005.
- Other key stakeholders are represented in workgroups on Functionality; Security and Reliability; Interoperability; and Certification Process. See: [www.cchit.org](http://www.cchit.org).



# DOQ-IT

Doctors' Office Quality Information Technology

## Quality Improvement Initiatives

- Physician Focused Quality Initiative builds upon ongoing CMS strategies and programs to:
  - Assess quality of care for key illnesses and clinical conditions that affect many people with Medicare
  - Support clinicians in providing appropriate treatment
  - Prevent health problems that are avoidable
  - Investigate the concept of payment for performance.
- The Physician Focused Quality Initiative includes
  - Doctor's Office Quality (DOQ) Project
  - Doctor's Office Quality Information Technology (DOQ-IT) Project
  - Vista-Office EHR
  - Several Demonstration Projects and Evaluation Reports
- DOQ-IT is a 2-year demo designed to improve quality of care, patient safety, and efficiency for services provided to Medicare beneficiaries by promoting adoption of EHR and HIT in primary care physician offices.
- Quality measures will be reported by participating practices in DOQ-IT via standardized EHR platform to QIO Clinical Warehouse (QIO CW)
- QIO CW will process electronically transmitted information regarding practitioner performance and identify opportunities for improvement, including enhancing access to:
  - Patient information
  - Decision support
  - Reference data
  - Patient-clinician communications
- Integrated approach to improving care for Medicare beneficiaries in areas of
  - Diabetes
  - Heart failure
  - Coronary artery disease
  - Hypertension
  - Osteoarthritis
  - Preventive care



# VistA

- Through the VistA-Office EHR project, CMS is working with the Veterans Health Affairs (VA) to transfer health information technology to the private sector.
- CMS is funding development of a VistA-Office EHR version of the VHA's hospital VistA system for use in clinics and physician offices. An overriding goal of VistA-Office EHR is to stimulate the broader adoption and effective use of EHRs by making a robust, flexible EHR product available in the public domain to provide:
  - Support for disease management, including reporting clinical data to a CMS-sponsored clinical data warehouse for quality improvement purposes
  - Enhance registration process to meet the needs of the general population
  - Enhance functionality for Obstetrics/Gynecology (OB/GYN) and Pediatrics care
  - Interface with practice management and billing systems
  - Improve installation procedures
- VistA-Office EHR is expected to be available July 2005 to support the Quality Improvement Organization activities aimed at improving quality in physician offices. The system will be made publicly available for use by commercial EHR vendors or installed directly by healthcare providers.





# Continuity of Care Record

- Joint standard developed by:
  - ASTM International, E31 Committee on Health Informatics
  - Massachusetts Medical Society (MMS)
  - Healthcare Information and Management Systems Society (HIMSS)
  - American Academy of Family Physicians (AAFP)
- Specification of content for an organized, transportable set of basic patient information consisting of most relevant and timely facts about a patient's condition, especially for use in referrals and transfers of patients across the continuum of care
- CCR is a defined set of core data in specified XML code, that can be prepared, transmitted, and viewed:
  - In a browser
  - In an HL7 CDA (Clinical Document Architecture)-compliant document
  - In secure email
  - In any XML-enabled word processing document
  - In multiple formats
- It can also be printed as a paper document and stored on a portable storage device for use as a personal health record



# Conceptual Model of CCR

- CCR identifying information
- Patient identifying information
- Patient insurance/financial information
- Advance directives
- Patient's health status
  - Condition, diagnosis, or problem
  - Family history
  - Social history and health risk factors
  - Adverse reactions/allergies/etc.
  - Medications
  - Immunizations
  - Vital signs/physiological measurements
  - Lab results/observations
  - Procedures/imaging
- Care documentation
- Care plan recommendation
- Practitioners
- CCR is not an EHR
  - It is not a patient's lifelong health status and health care
  - It does not provide interactive clinical decision support
  - It can introduce providers to electronic documentation and ultimately to EHR
- It is not universally accessible
- It does not have a universal patient identifier

# Personal Health Records

- No standard at this time
- Connecting for Health – Personal Health Records Working Group ([www.connectingforhealth.org](http://www.connectingforhealth.org))
- [www.informatics-review.com/records.html](http://www.informatics-review.com/records.html)
  - Resource for articles
  - Personal health record on the Internet
- See also:  
[www.ehealthinsurance.com/ehealthinsurance/aboutUsCopy/KeepingAPersonalHealthRecord.html](http://www.ehealthinsurance.com/ehealthinsurance/aboutUsCopy/KeepingAPersonalHealthRecord.html)



# Financial Incentives

- Connecting for Health...A Public-Private Collaborative, [www.connectingforhealth.org](http://www.connectingforhealth.org)
- Achieving Electronic Connectivity in Healthcare, Working Group on Financial, Organizational and Legal Sustainability of Health Information Exchange
- Recommendations:
  - Financial incentives need to be realigned to promote quality care improvement via IT adoption, connectivity, and information exchange among all healthcare providers
  - Specific financial incentives recommended
  - Qualitative analysis supports a business case that is better for “incremental applications” (steps toward an EHR) so long as they are not dead-end applications.
  - Small and medium-sized practices have greater potential to benefit from information exchange, but will require greater attention and support in order to achieve sustainability
- See also: Center for IT Leadership (C!TL): The Value of Healthcare Information Exchange and Interoperability ([www.citl.org](http://www.citl.org))

# **X. Emerging HIT Infrastructure**

## **Part 2. Health System Relationships**



# Content Part 2.

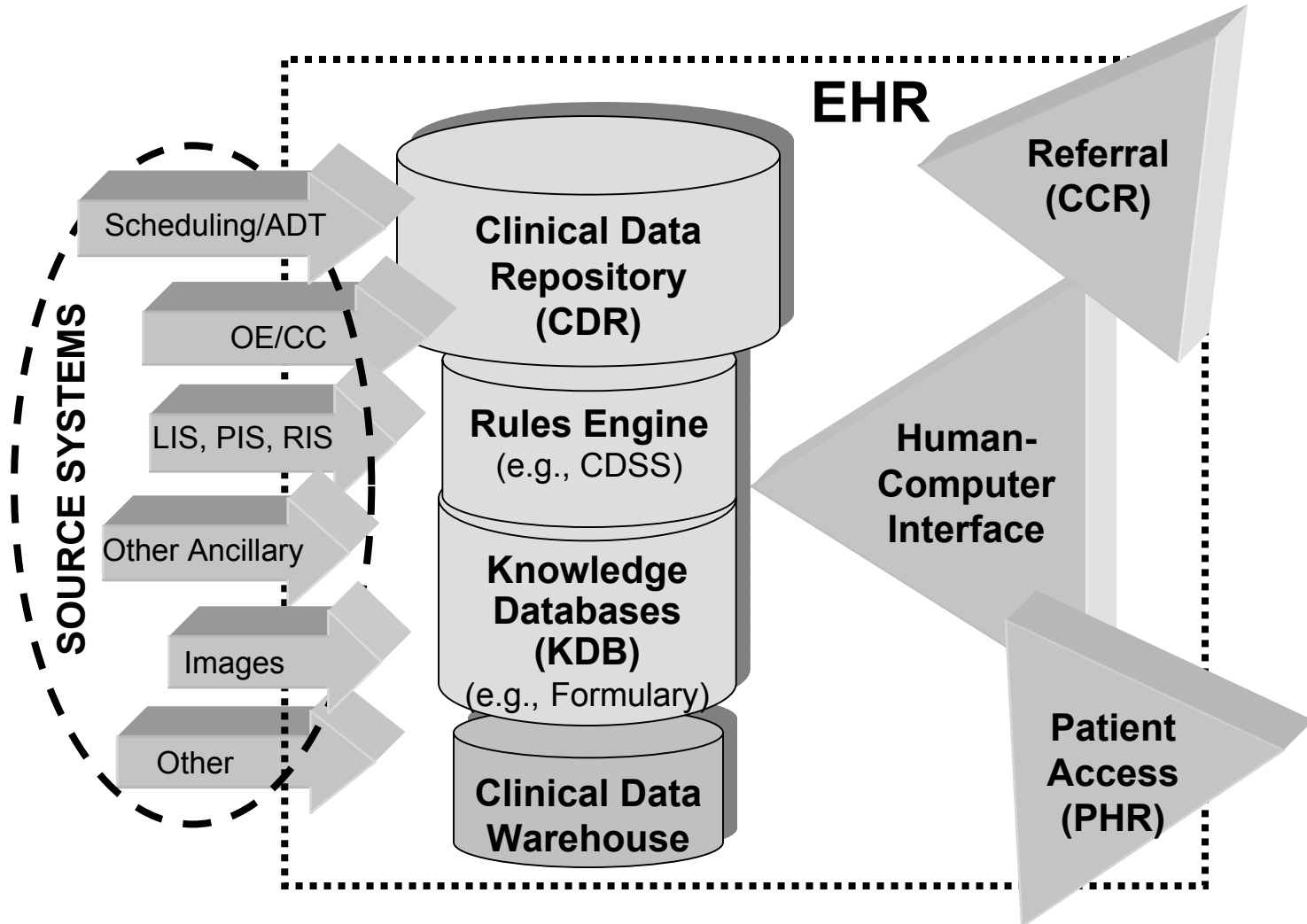
- Integrating Integrated Delivery Networks
- National Health Information Infrastructure
- National Health Information Network
- Emergence of Regional Health Information Organizations and Health Information Exchange



# Integrating IDNs

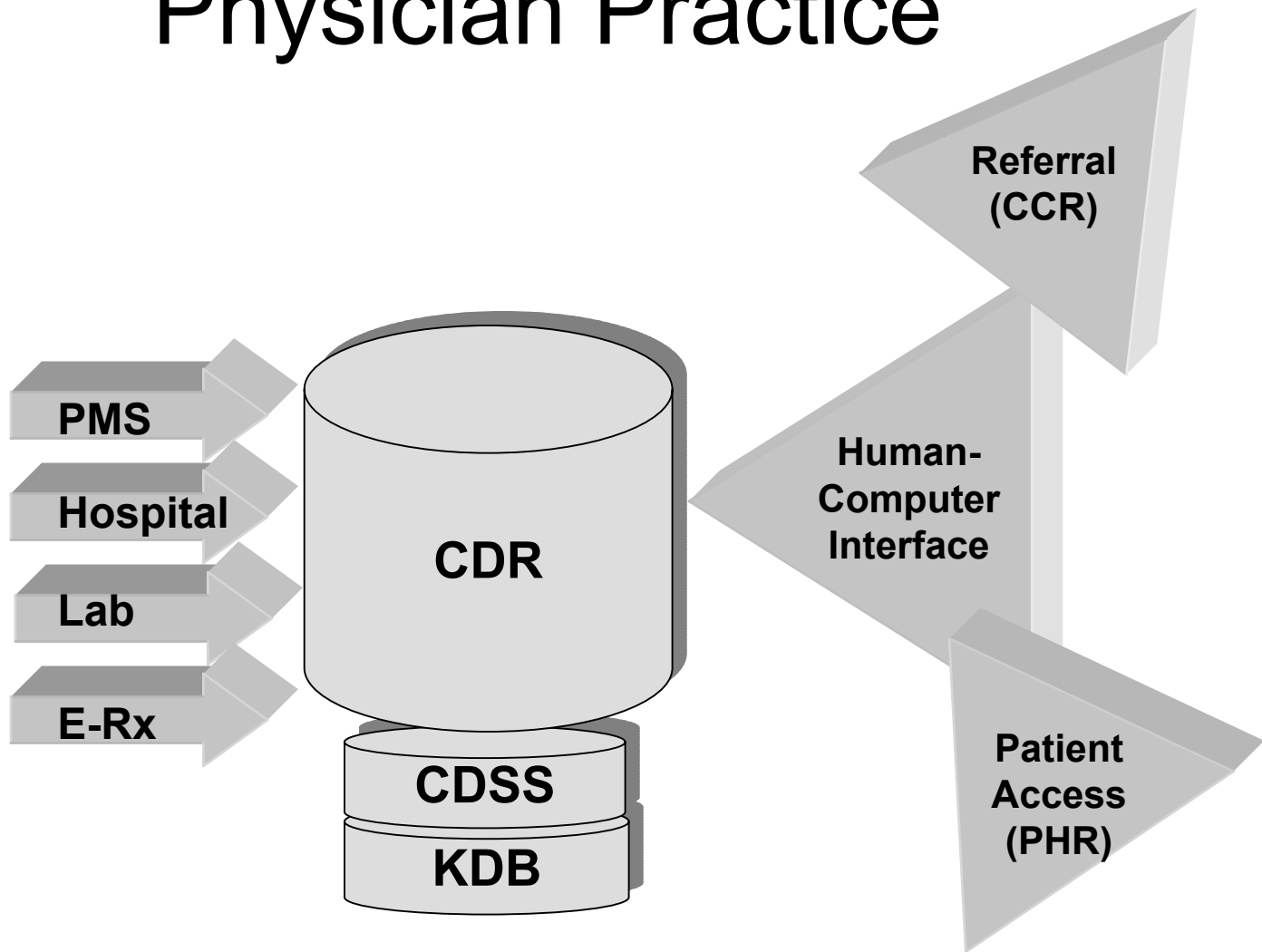
- Focus is on regional health information organizations and national health information network
- Many integrated delivery networks (IDNs) are not exchanging health information to the extent they could or should be

# EHR Conceptual Model: Hospital



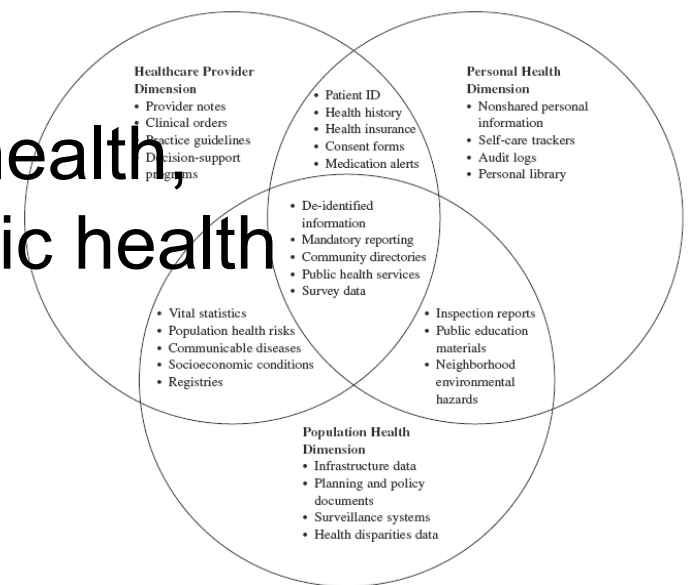


# EHR Conceptual Model: Physician Practice



# National Health Information Infrastructure

- Initiative to promote patient safety, improve healthcare quality, detect bioterrorism, better inform and empower consumers, better understand health care costs.
- Three dimensions: personal health, health care delivery, and public health
- [www.ncvhs.hhs.gov/Reports](http://www.ncvhs.hhs.gov/Reports)



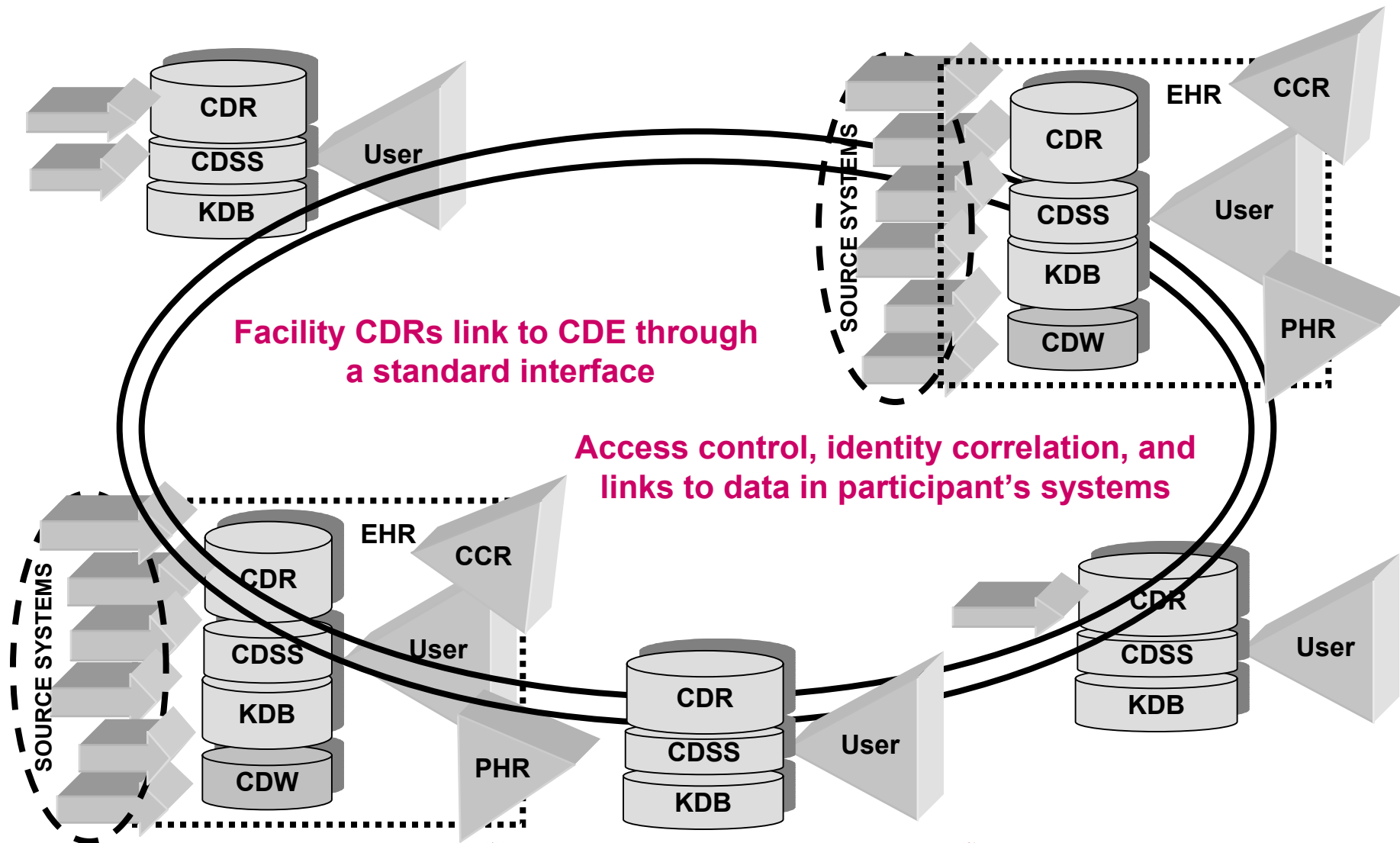
# National Health Information Network

- “Nonproprietary, broadly used technology within the public domain that can provide low-cost and secure data movement,” *Framework for Strategic Action*
  - See ONCHIT HIT Programs, as well as:
    - Public Health Information Network (PHIN) from CDC
    - National Electronic Disease Surveillance System (NEDSS) from CDC
    - Regulation for E-prescribing standards for Medicare Prescription Drug Plan (PDP) under MMA
    - Regulation for structured product labeling (FDA) and, with the NLM, electronic drug information called DailyMed
    - DoD security technology transfer (VA and DoD Common Security Architecture)

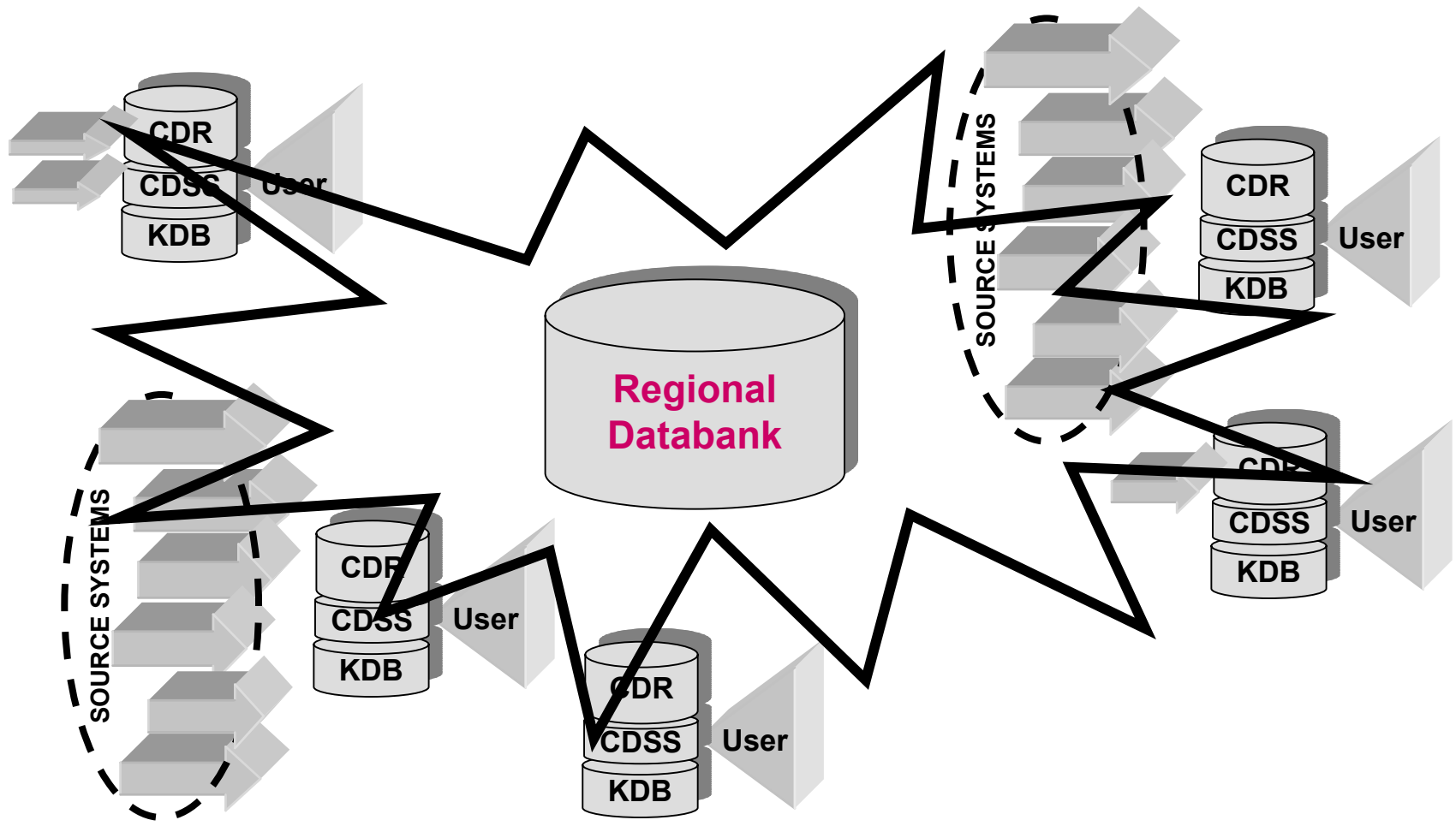
# RHIO

- Regional Health Information Organization
  - Local leadership, oversight, fiduciary responsibility, and governance for the development, implementation, and application of secure health information exchange across care settings
- Three major experiments; two primary models:
  - Santa Barbara County Core Data Exchange
  - Share Health Information Across Regional Entities (Massachusetts)
  - Indiana Health Information Exchange
- Initiatives:
  - Are increasing in number: 134 community-based **health information exchange (HIE)** projects in 42 states
  - Need coordination, funding, and a sustainable business model
  - There is yet no systematic basis for regional organization

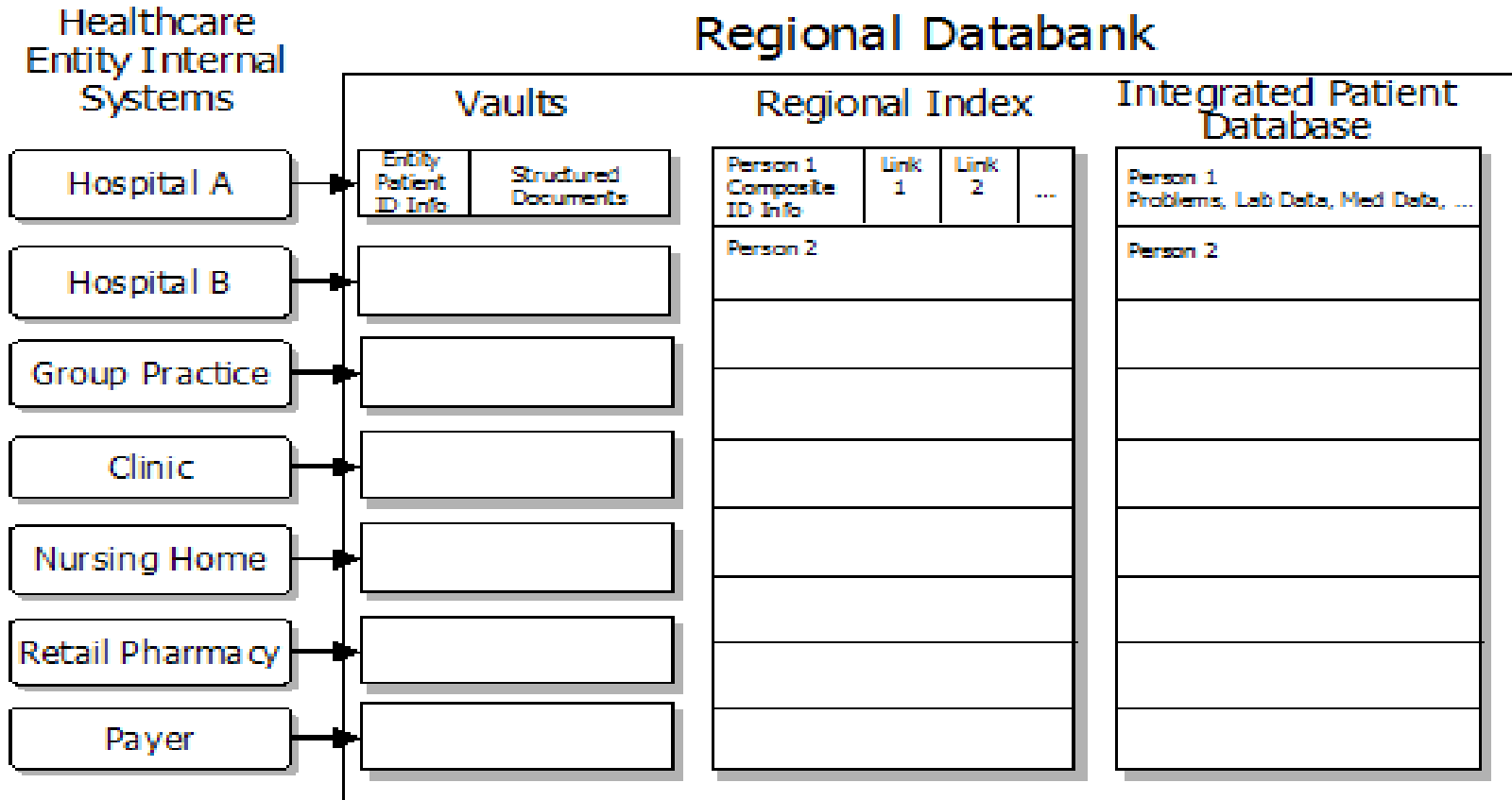
# RHIO Models – “Santa Barbara County”



# RHIO Models – “Indianapolis”



# RHIO Repository



# HIE Legal Issues

- Governance & organization
  - Governance
  - Corporate formation
  - Tax status (a State issue)
  - Business plan and budget
  - Criteria for involvement
  - Funding
    - eHealth Initiative sub-grants
    - Health plans
  - Potential liabilities

From: HIT Summit, October 23, 2004





# HIE Agreements

- User agreements
  - Duties and rights of members
    - To other users
    - To the network entity
    - Third parties
  - Compliance with HIPAA
  - Proper use
  - Ownership
  - Cost and liability sharing
  - Technology standards
- Vendor agreements
  - Between network, IT, other vendors
  - Operational and performance specifications
  - Performance measurements, rewards and penalties
  - Key staff
  - Audit rights and protocols
  - Compensation
  - Intellectual property issues

From: HIT Summit, October 23, 2004



# HIE Security

- Local security inoperability
  - Encryption standard
  - Public key administration
- Use local “utility”
  - Create and manage security standards
  - May serve to provide security services to some participants (e.g., hardened data center)

# **X. Emerging HIT Infrastructure**

## **Part 3. International Lessons**



# Content Part 3.

- Case Studies
  - National Health Service, U.K.
  - Canada Infoway
- Differences and Similarities

# Delivering the NHS Plan, 2002

- Delivering 21<sup>st</sup> Century IT Support for the NHS, National Specification for Integrated Care Records Service
  - Robust infrastructure, including national approach to authentication, security, and confidentiality
  - Electronic booking of appointments
  - Electronic transfer of prescriptions
  - Integrated care records service

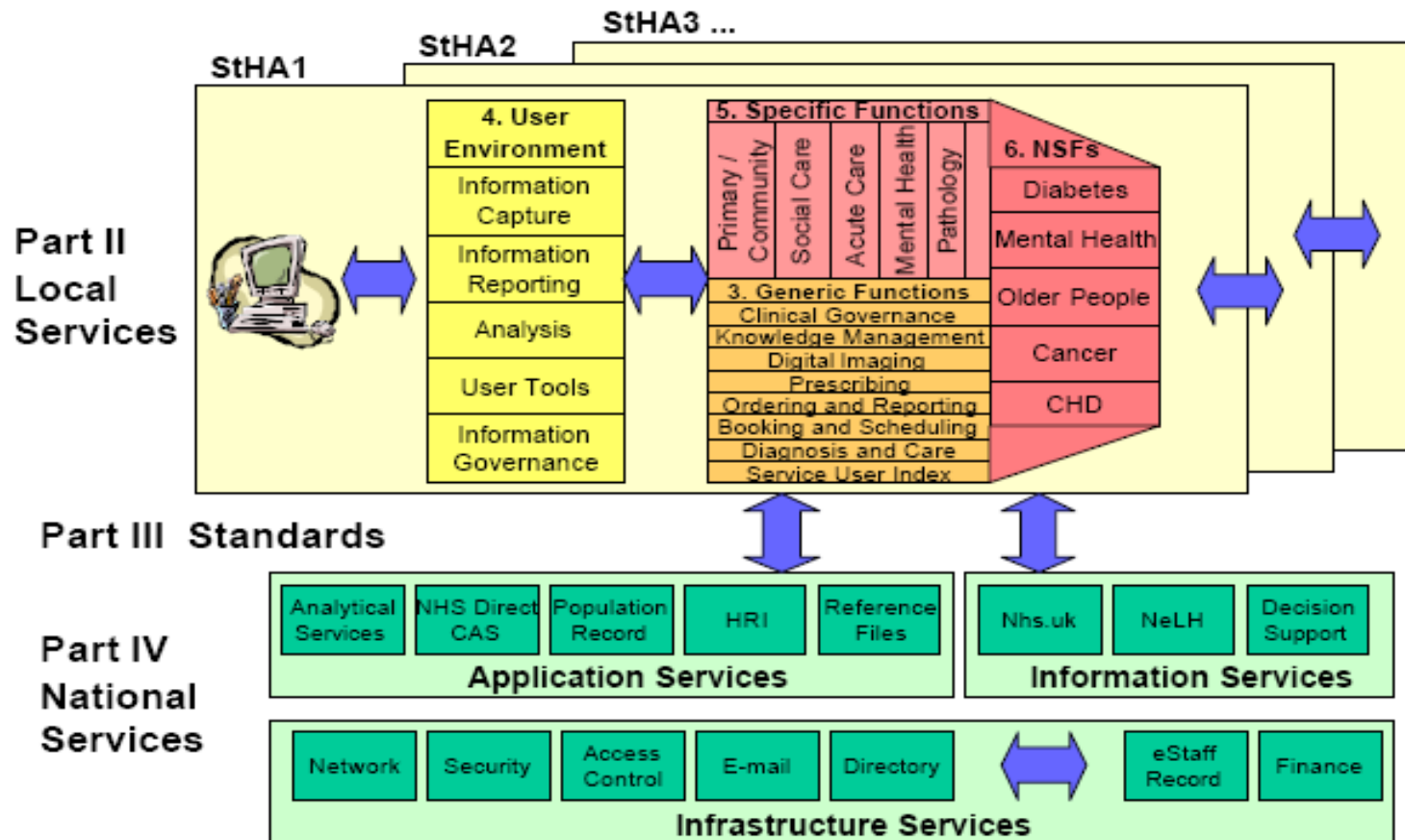
# NHS Standards

- Information governance – confidentiality, security, and data quality
- SNOMED CT, ICD-10, OPCS-4, etc.
- HL7 v.3, DICOM, ENV 13606
- XML schemas
- Datasets
- Training and service management
- e-GIF (e-Government Interoperability Framework)
- Infrastructure in NHS organizations

# Every Patient to Get Electronic Patient Record, December 2003



National Programme for Information Technology





- Independent, publicly funded catalyst organization tasked with accelerating development and adoption of compatible electronic health information systems
- Makes strategic investments in select projects that are building blocks that will ultimately form the pan-Canadian system
  - Infostructure: technical architecture
  - Registries: patient identification and practitioner listings
  - Drug information systems: review prescription regimens and histories
  - Diagnostic imaging systems: accessibility to radiology reports
  - Laboratory information systems: accessibility to lab results
  - Telehealth: enabling remote patient care





# Definition of EHR

- A secure and private lifetime record of an individual's key health history and care.
  - Creates significant value, providing a longitudinal view of clinical information available electronically to authorized health care providers and the individual anywhere and anytime in support of care
  - Includes people, organizational entities, business processes, systems, technology and standards that interact and exchange clinical data

# *Many* Examples

- USA
- Canada
- Europe: U.K., Germany, Scandinavia, Benelux (Belgium, Netherlands, Luxemburg), Others
- Pacific Rim: Australia, New Zealand, Japan, Others

# Different Driving Factors

- Health system structure and goals
- Data protection culture
- Societies' proclivity for legal action and reimbursement methodologies
- Technology infrastructure, especially Web
- Funding (centralized or decentralized)
- Organizational approach (top down or bottom up)

# Similarities and Differences

- Agreement on need for:
  - Controlled vocabulary
  - Structured data
  - Interoperability
- Health care lags “behind” other industries in adoption of IT
- Differences in:
  - EHR concepts
  - Roadmap to achieve EHR

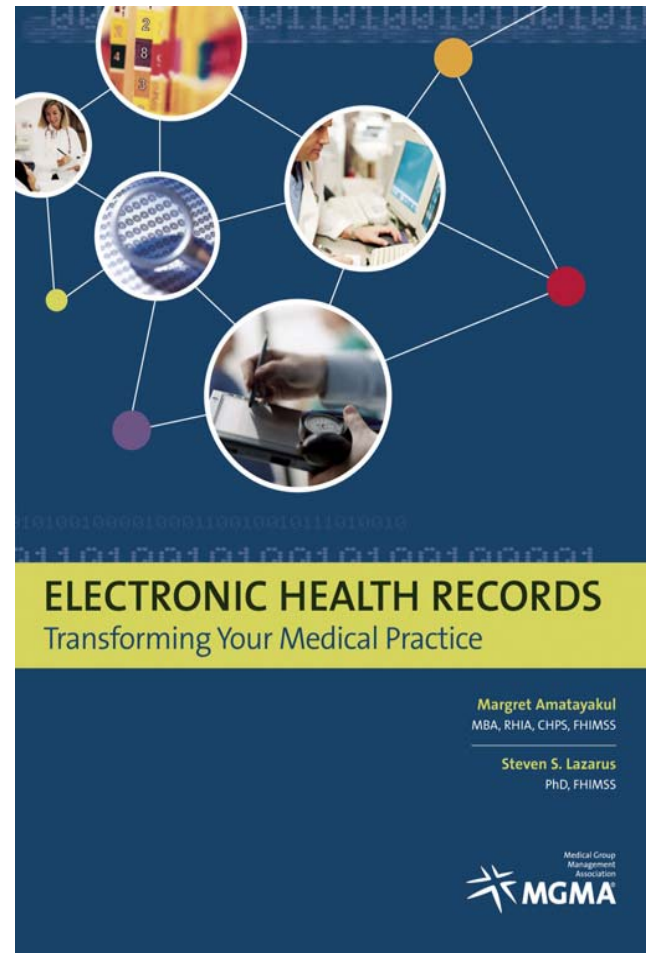
# References

- “Physicians’ use of electronic medical records: Identifying and crossing the barriers”, by Steven S. Lazarus, PhD, FHIMSS, *MGM Journal*, May/June 1999
- *Electronic Health Records: Transforming Your Medical Practice*, MGMA, by Margret Amatayakul, MBA, RHIA, CHPS, HIMSS and Steven S. Lazarus, PhD, FHIMSS, forthcoming 2005
- *Electronic Health Records: A Practical Guide for Professionals and Organizations*, Second Edition, by Margret K. Amatayakul, MBA, RHIA, CHPS, FHIMSS, published by AHIMA, 2004

# “Electronic Health Records: Transforming Your Medical Practice”

Available from MGMA  
in late February/early  
March, 2005

Copyright 2005 Medical Group  
Management Association.  
Reprinted with permission.



# Contact Slide

- Steven S. Lazarus, PhD, CPEHR, CPHIT, FHIMSS  
President  
Boundary Information Group  
(303) 488-9911  
[sslazarus@aol.com](mailto:sslazarus@aol.com)
- Margret Amatayakul, MBA, RHIA, CHPS, CPEHR, CPHIT, FHIMSS  
President  
Margret\A Consulting, LLC  
847-895-3386  
[margretcpr@aol.com](mailto:margretcpr@aol.com)



# Steps to Complete HIT Training (Optional)

- Courses I – VIII
- [www.healthitcertification.com](http://www.healthitcertification.com)
- Internet option
- Regional program option

