



Pharmacy Interchange

The EHR and Pharmacy Integration: A Preferred Future

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Quality Health Care

- ◆ Empowers patients
- ◆ Includes the environment
- ◆ Has multiple components:
 - Clinical
 - Cost
 - Functional
 - Satisfaction
- ◆ Encompasses the entire experience
- ◆ Provides a continuum of care



Future of Quality Health Care

- ◆ Reimbursement for Outcomes
- ◆ Decisive and Effective Systems for:
 - Efficiency
 - Ethics
 - Resource Utilization
 - Social Accountability
- ◆ Innovative health care delivery
- ◆ Commitment to *Improving the Quality of Life*



Health Care Delivery *Common Goals...*

- ◆ Collaborative Practice
 - Improve patient care
 - Increase communication between and among patients / providers
 - Increase availability of objective measures
 - Reduce total cost for care over time

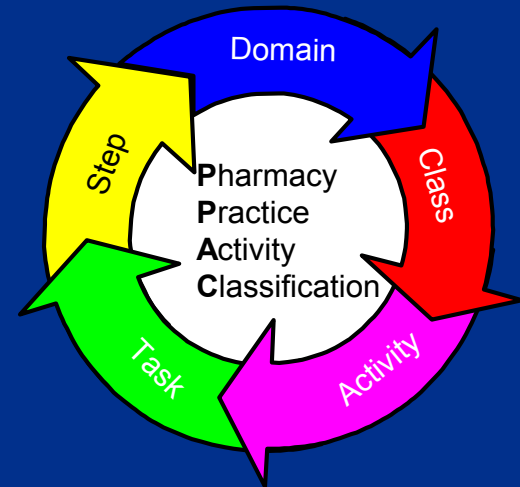


Technology and Pharmacy Practice

- ◆ Pharmacists and Pharmacy have a rich history in the adoption and use of
 - Transaction Standards
 - Computers
 - Automation
- ◆ Let's consider some of those in the current context of practice innovation...

Pharmacy Practice Activity Classification (PPAC) - 1998

- Dispensing of Drugs and Devices
 - Processing the Prescription
 - Preparation of the Drug
 - Delivery of Drug or Device
- Prevention/Resolution of Drug Therapy Problems
 - Ensuring Appropriate Pharmacotherapy
 - Ensuring Patients' Understanding
 - Monitoring Patient Response
- Health Promotion and Disease Prevention
 - Community Based Services
 - Individual Level Services
- Health Systems Management
 - Improving Medication Use Systems
 - Practice Management





PPAC Created by Ten Professional Associations

- Academy of Managed Care Pharmacy
- American Association of Colleges of Pharmacy
- American College of Apothecaries
- American College of Clinical Pharmacy
- American Pharmacists Association
- American Society of Consultant Pharmacists
- American Society of Health-System Pharmacists
- National Association of Boards of Pharmacy
- National Association of Chain Drug Stores
- National Community Pharmacists Association



Advanced Pharmacy Services

◆ Health Promotion / Disease Prevention

- Health Risk Assessment
- Immunizations
- Wellness Programs

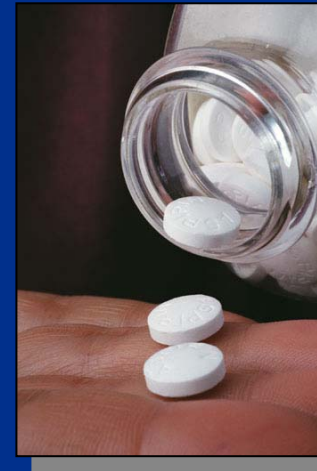
◆ Disease Management

- Asthma
- Cardiovascular Disease (Dyslipidemia, Hypertension)
- Coagulation Disorders
- Congestive Heart Failure
- Diabetes
- Osteoporosis

Prevalence
Risk
Cost

Medication Use in U.S.

**> 2.5 Billion
Prescriptions
Annually
(> \$80 Billion*)**



Complex Process

**Prescribing, Administering, Dispensing,
Monitoring, and Systems Management**



Community Pharmacy Claims Processing

- ◆ Dispensing Process
 - Profession enjoys virtually complete standardization for claims processing within the community pharmacy domain
 - NCPDP
- ◆ Monitoring Process
 - Current information void...



Greater Reliance on Drug Therapy: Prescription & OTC Medications

- ◆ Currently the primary treatment modality and largest expense for illness and disease
 - Strengths
 - Compatibility with lifestyle
 - All medications are self-administered
 - Doesn't require linkage to a physical facility or health care provider
 - Challenges
 - Requires consumers to become educated to “use” them correctly in order to receive “return on investment”



Side Effects on Society

- ◆ 4 times as many Americans die each year from medication related problems as die in automobile accidents
- ◆ 10 of every 100 patients in the hospital at any moment are there because of a medication related problem
- ◆ For every dollar spent on medications for nursing home patients, an additional \$1.33 in health care resources are consumed in treating medication related problems
- ◆ For every dollar spent on medications for ambulatory patients, an additional two dollars are spent in treating preventable medication related problems



Adverse System Effects

- ◆ Problems with society's perception of safety and value
- ◆ Poor Persistence
- ◆ Even Poorer Compliance
- ◆ Increasing drug spend with less than optimal benefits



Baby Boomer → Graying Boomer

- ◆ Largest utilizers of drug therapy
- ◆ Population over the age of 65*
 - 1995 = 12%
 - 2020 = 16%
- ◆ Existing delivery system does not have the capacity to meet the needs

* United States Bureau of the Census, 1995.

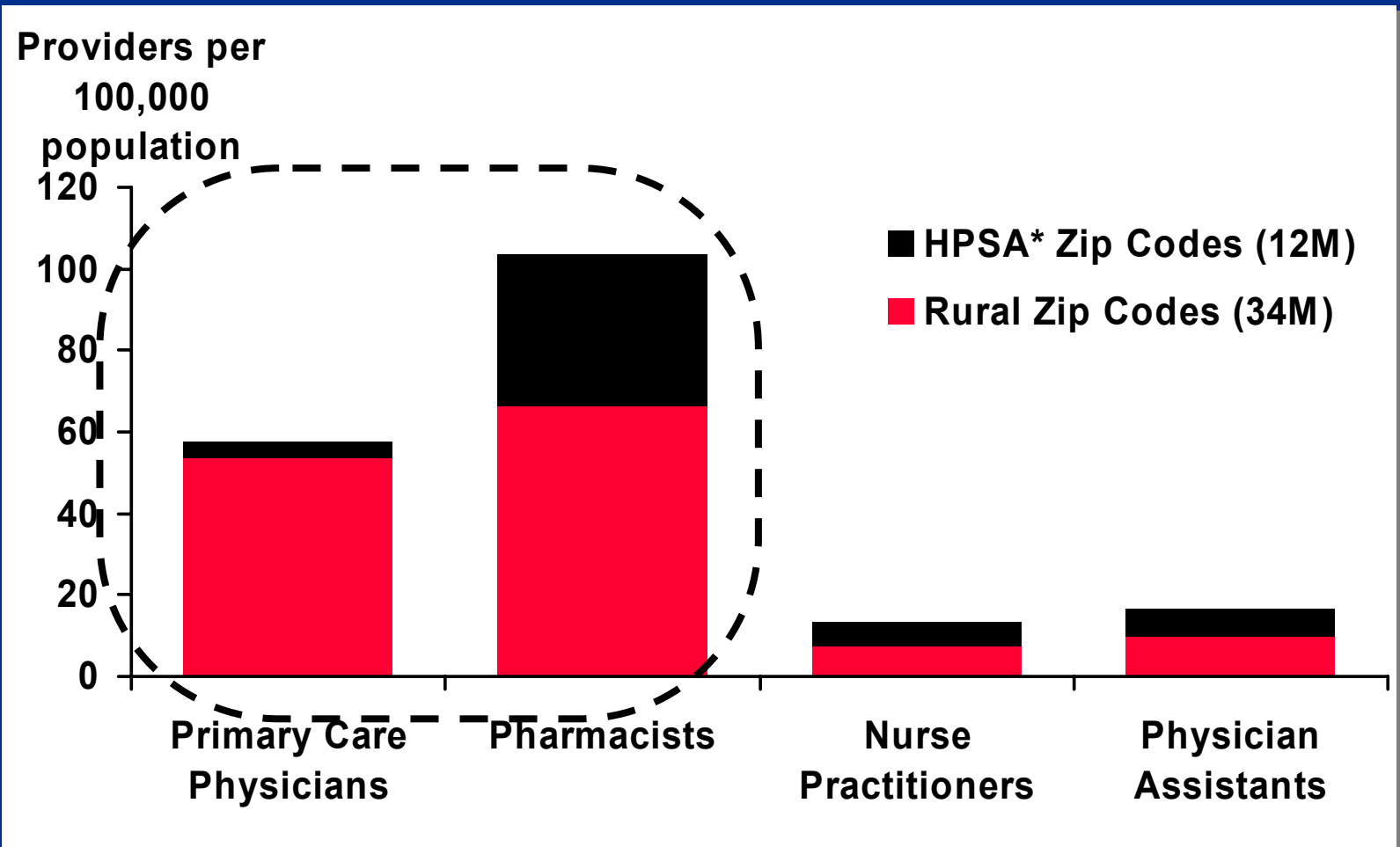


Pharmacist's Role is Changing

- ◆ Pharmacy ... A Profession in Transition
 - All pharmacists now trained at the doctorate level
 - Collaborative Drug Therapy Management (40 States)
 - Pharmacist Immunization Administration (36 States)
 - Waived Laboratory Testing by Pharmacists (44 States - e.g., lipid profiles, diabetes)

Physicians Have an Opportunity to Work More Closely With Pharmacists on Drug Therapy Management

Distribution of U.S. Provider Groups



Source: JAPhA 1999; 39:127-35.
 * HPSA: Health Provider Shortage Area



Patient Centric Drug Therapy

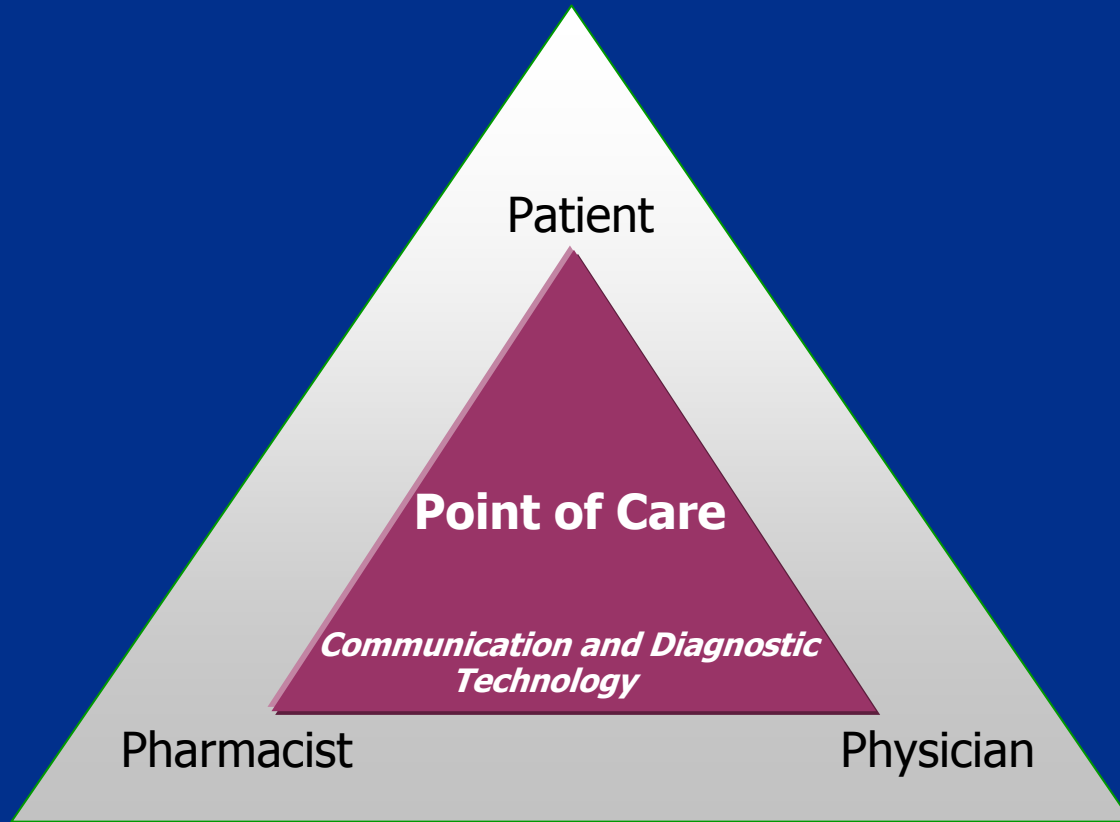
◆ Patient is the:

- Applier
- Utilizer
- Determiner

...of the outcomes associated with
medication “technology”

**Patients on drug therapy ultimately
“manage their own care”.**

Point of Care Technology



- ◆ Enhanced communication between and among all participants



Project ImPACT: Hyperlipidemia

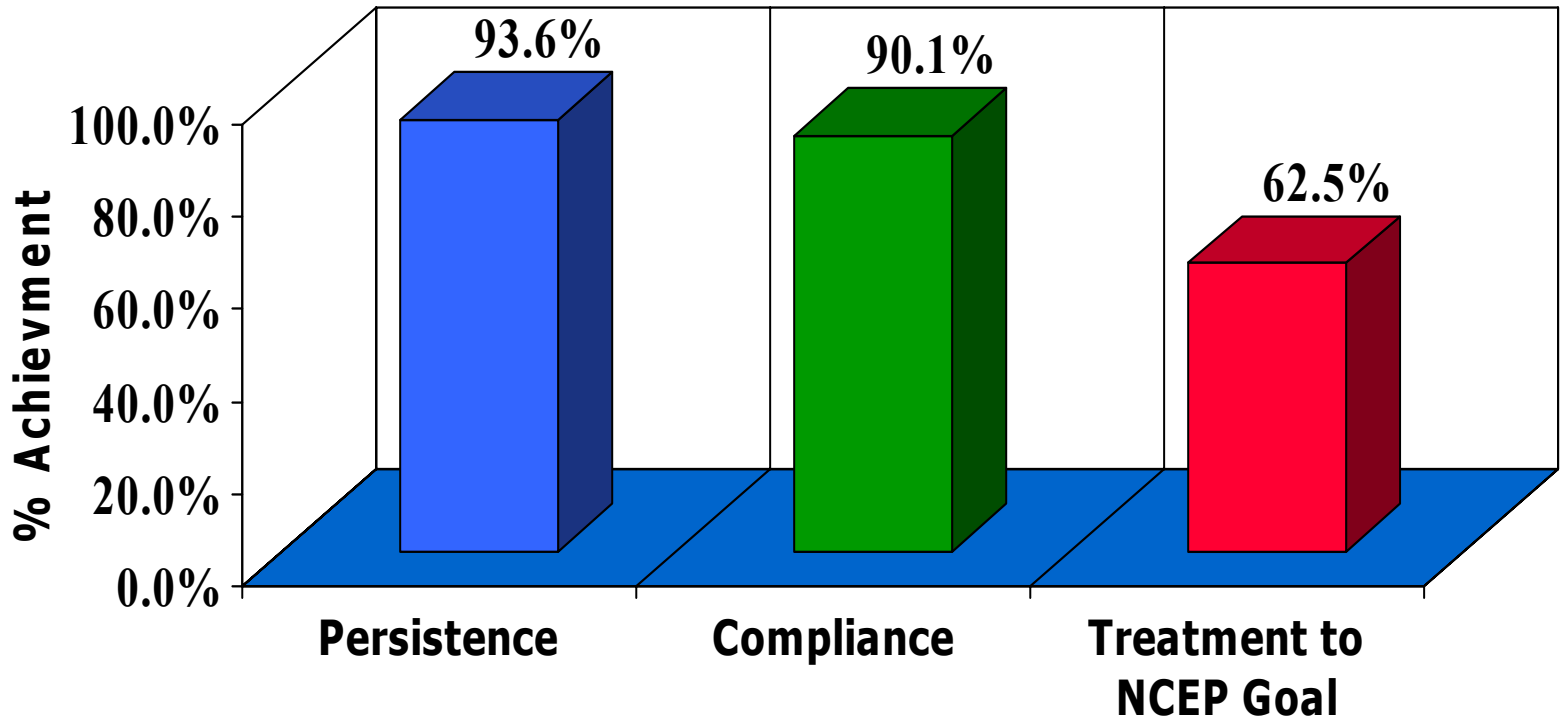


*397 patients collaborate with
pharmacists & physicians in 12 states
from March 1996 through October 1999.*

Improve Persistence And Compliance with Therapy

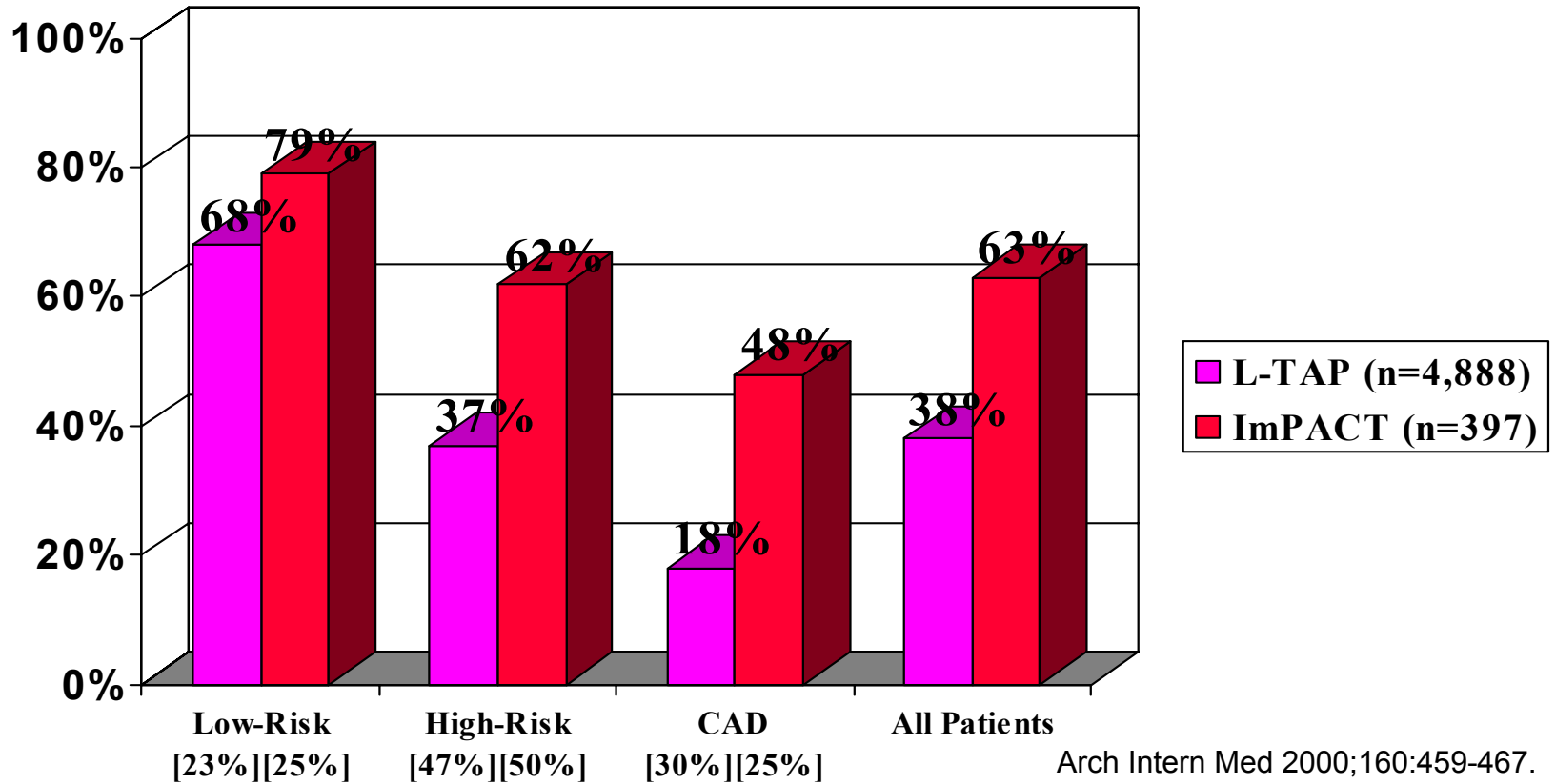
Project ImPACT: Hyperlipidemia

Results for 397 patients, 26 sites, 12 states x 2 yrs



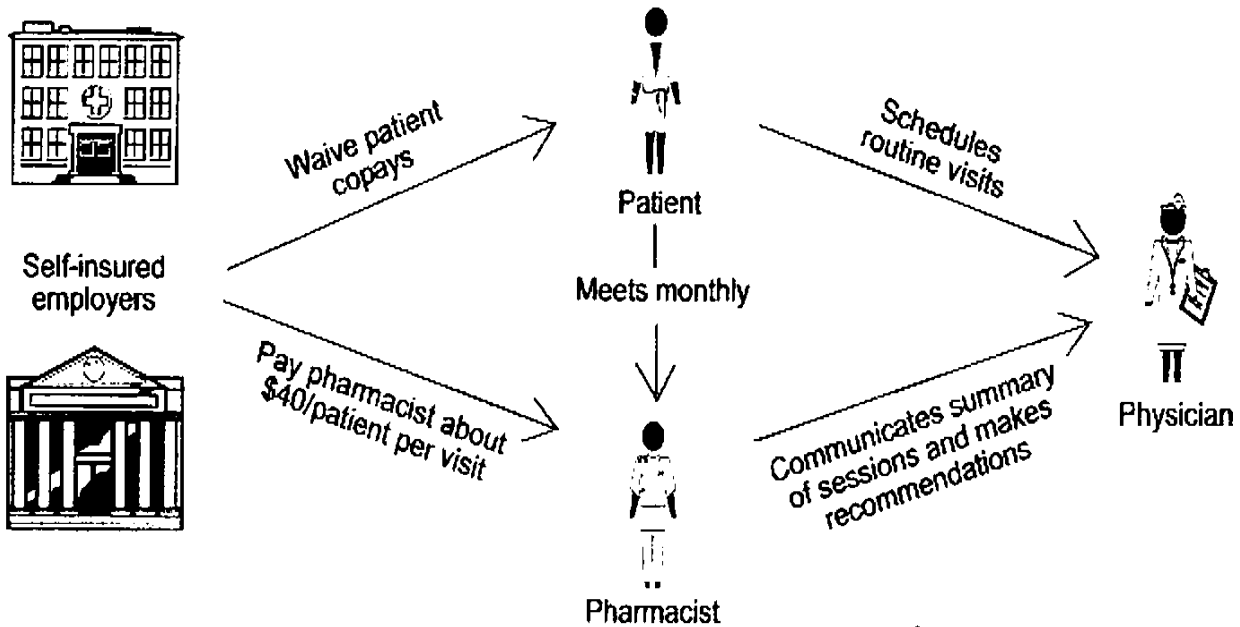
Achievement of NCEP LDL-C Goals

L-TAP vs. ImPACT: Hyperlipidemia



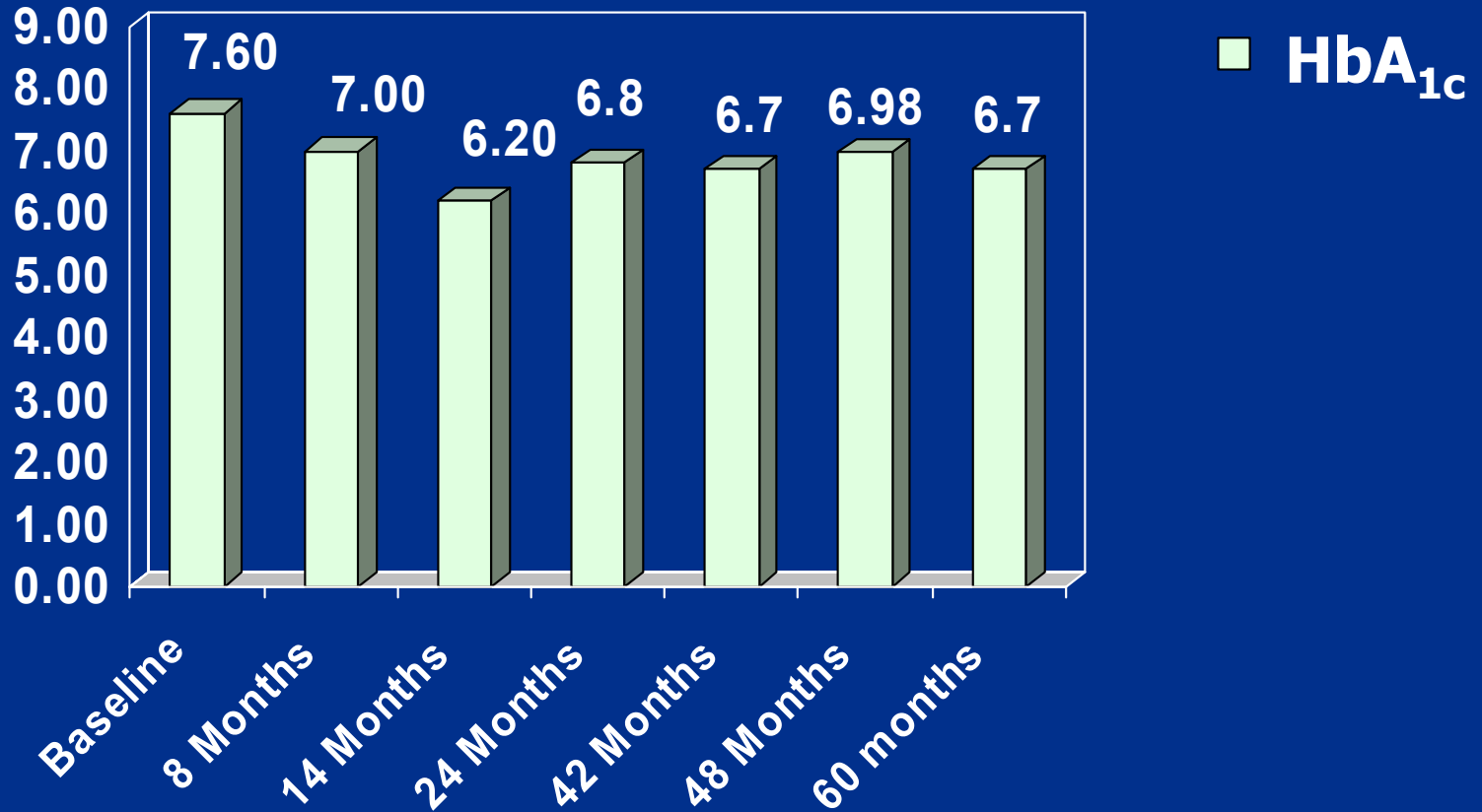
The Asheville Project

The Asheville Project at a glance



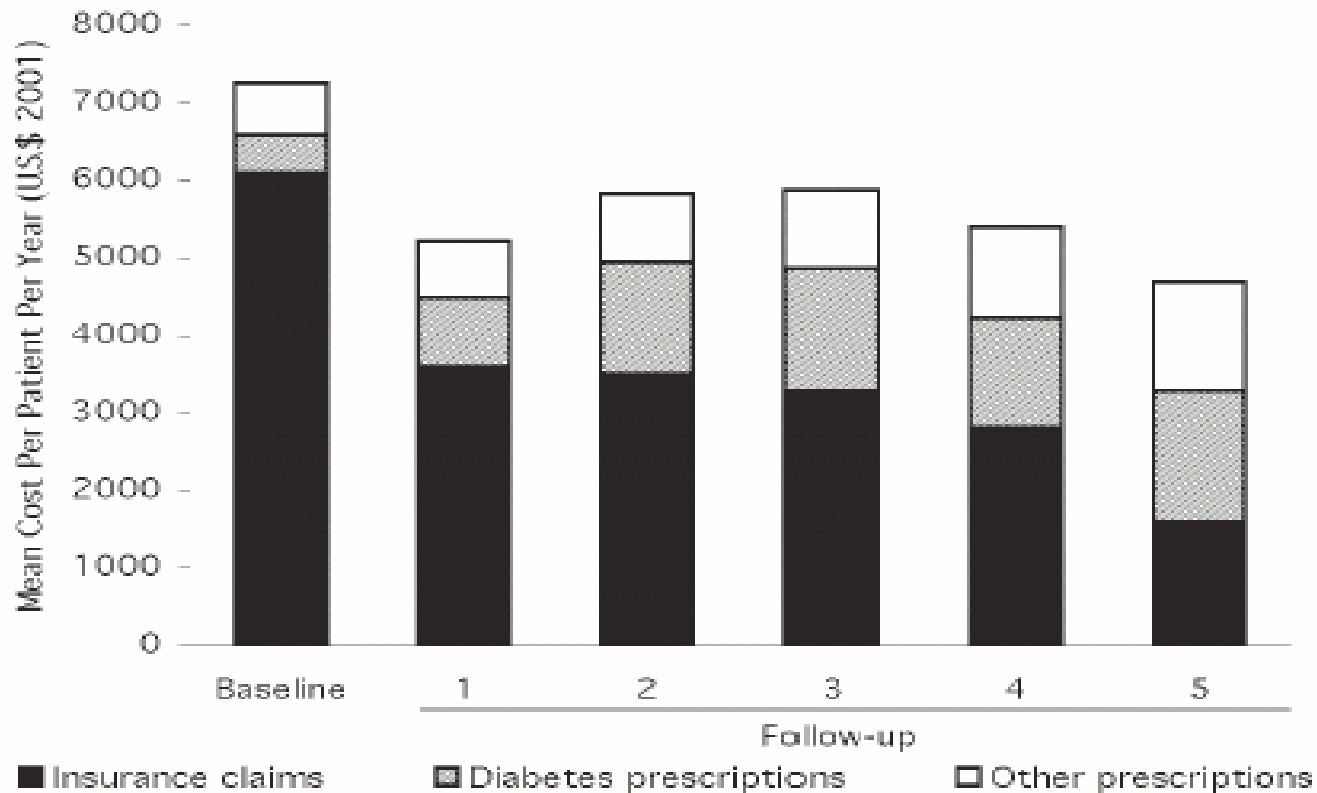
Source: Watch interview, 9/10/02.

Clinical Outcomes: Avg. Glycosylated Hemoglobin



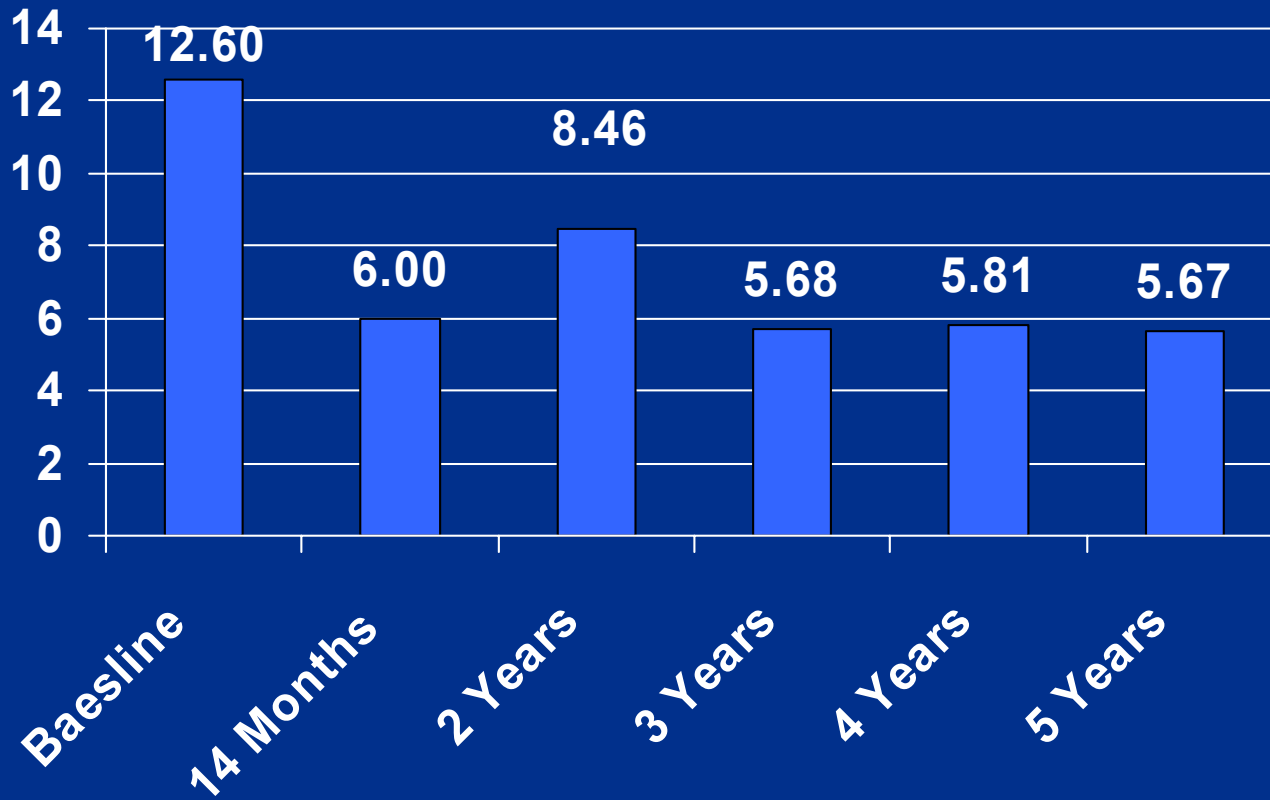
Direct Medical Costs in The Asheville Project

Figure 2. Direct Medical Costs Over Time





City of Asheville Diabetes Sick-Leave Usage





The Asheville Project Today

- ◆ Now over 800 patients from 3 employers are enrolled for diabetes, asthma, hypertension and lipid therapy management
- ◆ Patients continue to have improved outcomes & increased medication adherence
- ◆ 50% reduction in sick days
- ◆ Zero workers comp claims in the City diabetes group over 6 years
- ◆ Average net savings of \$1,500 per person with diabetes each year from year 2 on



Collaborative Practice Model Observations...

- ◆ Consistently produces an environment that results in:
 - Increased availability and use of objective clinical measures
 - Sharing treatment data and pertinent lifestyle and clinical information with patients and physicians
 - Periodic evaluation of the patient's progress toward clinical goals, and, if necessary, consultation and intervention with the patient's physician
 - Timely adjustments in the patient's treatment plans
 - Empowered patients who assume a more active role in their own care.



On-line Resources

- ◆ **Education:** Highly accessible learning tools for patients and health care providers
- ◆ **History:** Secure and confidential Electronic Health Record
- ◆ **Security:** Secure channel for patient-pharmacist-physician communication
- ◆ **Community:** Web-based support groups
- ◆ **Quality:** Ability to access objective measures of health and quality

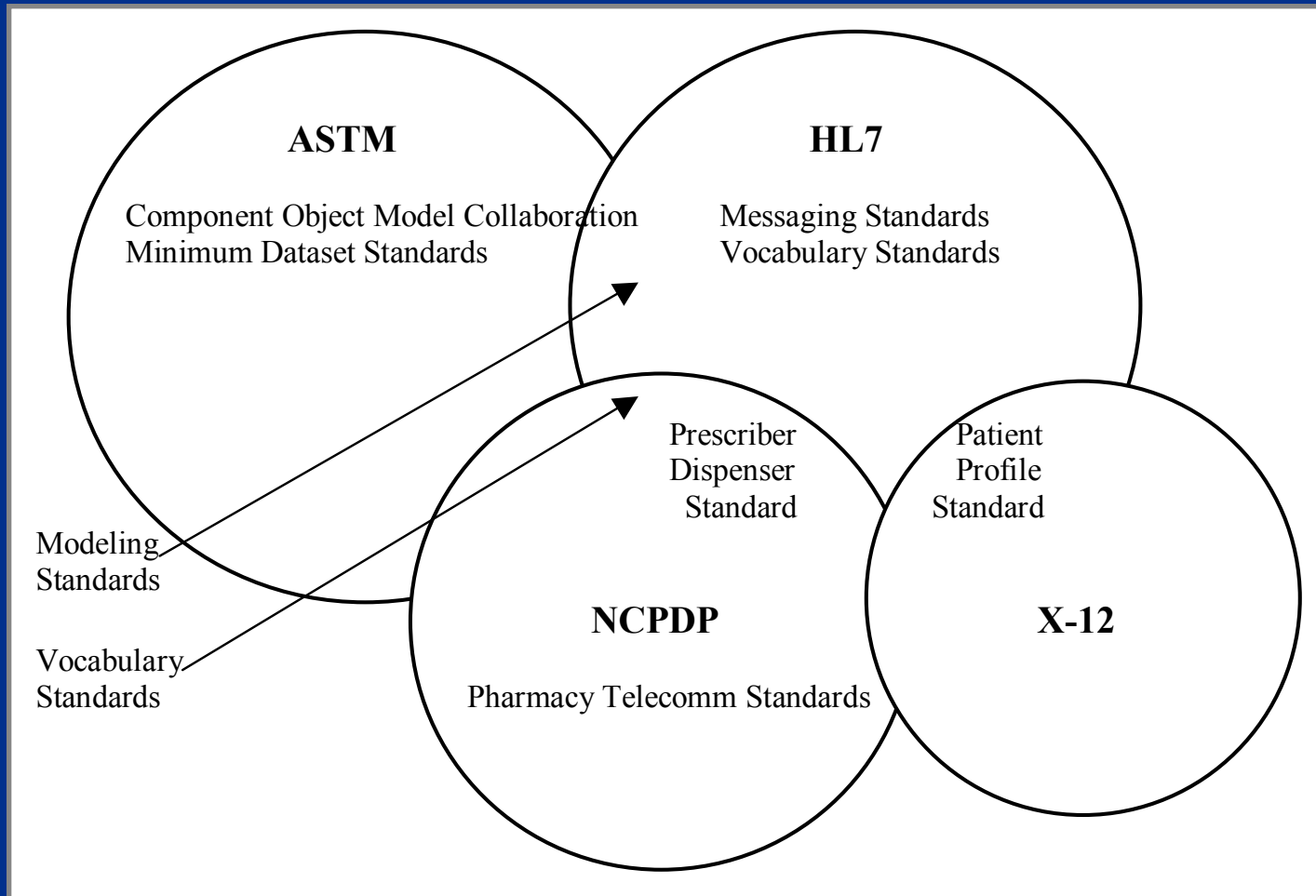


Creating a Preferred Future

- ◆ Requires “out of the box” thinking...
 - New structures for managing information
 - Improved processes for communication
 - Collaborative efforts to achieve improved outcomes
- ◆ Parallel Innovation
- ◆ System Disruption



Information Domain Integration Challenges





Privacy and Confidentiality: Real Issues and Real Concerns

- ◆ Will private healthcare information be used to deny or affect **Employment** ?
- ◆ Will confidential health information be used to deny or affect **Healthcare coverage** ?
- ◆ Will the patient have some level of control over their healthcare **Records** ?



Accountability vs. Control

- ◆ Need for a New Model
 - Facilitate location independent, secured, authenticated access to relevant patient care records by qualified professionals on a need to know basis.
- ◆ Secure, standardized storage structure(s)
- ◆ Confidential process for authenticated access
- ◆ Patient-centered privacy controls



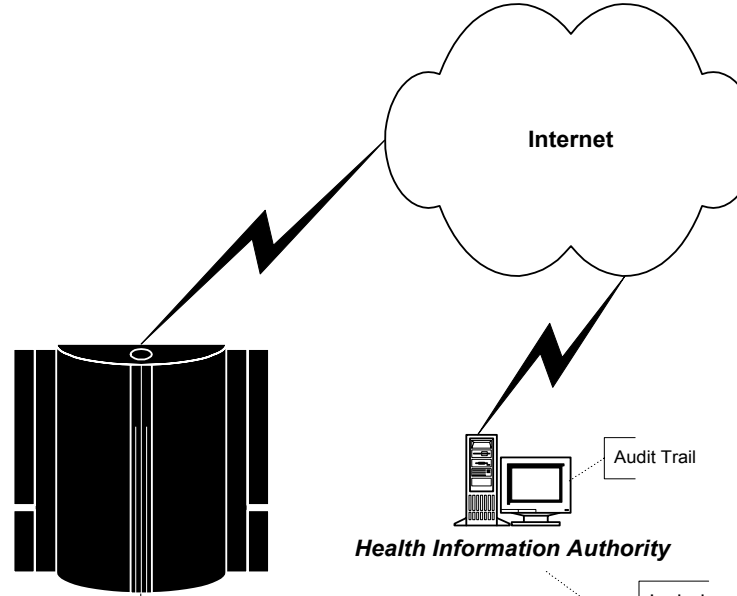
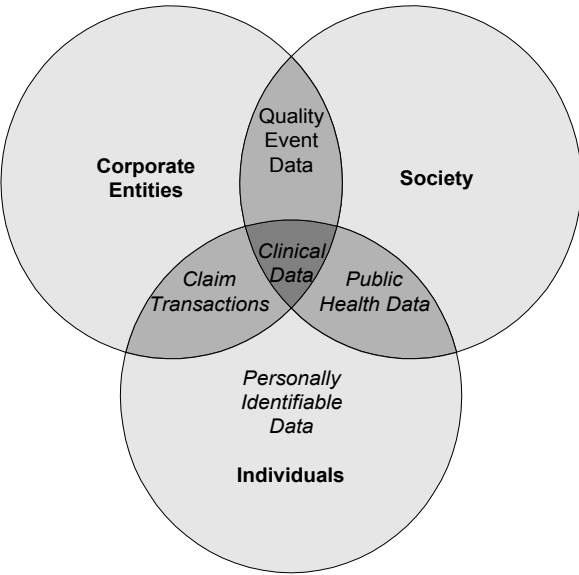
JAPhA Vol. 39, No. 3, 402 - 407.
May/June 1999.

- ◆ Designing Solutions for Securing Patient Privacy - Meeting the Demands of Health Care in the 21st Century
 - Provide a public-domain model for discussion in health care policy and technology forums
 - Stimulate technology development activities
 - Induce rational policy development efforts
 - Ensure ubiquitous opportunities for patients to become more informed, involved, and empowered to be in control of their own health

A Macro Level Model for Global, Distributed Electronic Health Record Management

Location independent, secured, authenticated access to relevant patient care records by qualified health care professionals on a need to know basis...

Information "Asset" Representation

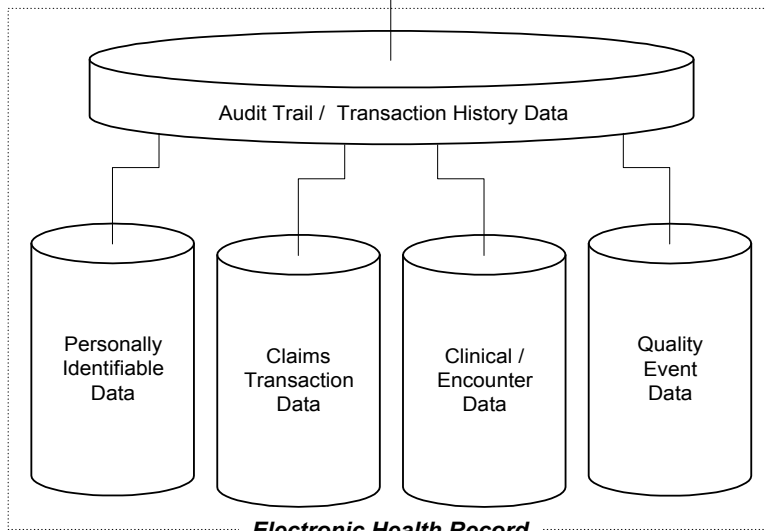


- Includes utilization of:
- Advanced Encryption Standards
 - Strong Authentication Techniques
 - Unique, Anonymous Patient/Provider IDs

Each user possesses different levels of access and "silo" linkage capability...

Each data "silo" record contains an encrypted, anonymous patient identifier...

Accounting layer insists on a high level of individual and process accountability...

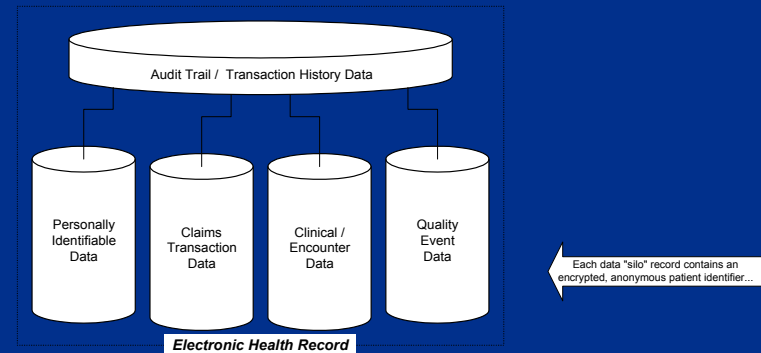


A Global, Distributed Electronic Health Record Management Model

◆ Component 1: Electronic Health Record

– Structure and process model that contains four distinct information silos:

- Personally Identifiable Data
- Claims Transaction Data
- Clinical / Encounter Data
- Quality Event Data



– Accounting layer insists on a high level of individual and process accountability

- Reviewable audit trails that track access to records
- Transaction histories that provide for the re-creation of views at specific points in time



A Global, Distributed Electronic Health Record Management Model

- ◆ Component 1: Electronic Health Record
 - **Personally Identifiable Data** examples
 - Encrypted, anonymous patient identifiers
 - Administrative data
 - Demographic information
 - Legal agreements
 - Financial information
 - Provider data
 - Accessible by patients, payers, providers, and others as authorized by patient agreements



A Global, Distributed Electronic Health Record Management Model

◆ Component 1: Electronic Health Record

– **Claims Transaction Data** examples

- Encrypted, anonymous patient identifiers
- UB-92 claim form elements
- HCFA-1500 claim form elements
- Other market-specific business transaction datasets
- Diagnostic classification codes (e.g., ICD)
- Procedure classification codes (e.g., CPT)

- Accessible by patients, payers, providers, researchers, and others as authorized by patient agreements



A Global, Distributed Electronic Health Record Management Model

- ◆ Component 1: Electronic Health Record
 - **Clinical / Encounter Data** examples
 - Encrypted, anonymous patient identifiers
 - Patient history and assessment data
 - Immunization histories
 - Hazardous stressor exposures
 - Problem lists and diagnostic tests
 - Clinical orders and medications
 - Scheduled appointments and encounter data
 - Accessible by patients, providers, researchers, and others as authorized by patient agreements



A Global, Distributed Electronic Health Record Management Model

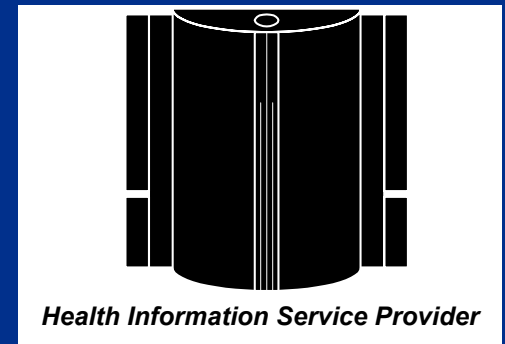
- ◆ Component 1: Electronic Health Record
 - **Quality Event Data** examples
 - Encrypted, anonymous patient identifiers (if applicable)
 - Adverse reactions
 - Clinical interventions
 - Therapeutic evaluation
 - System errors
 - Other organizationally defined quality improvement
 - Information remains legally undiscoverable
 - Accessible to providers within their employment entities and others as authorized by patient agreements



A Global, Distributed Electronic Health Record Management Model

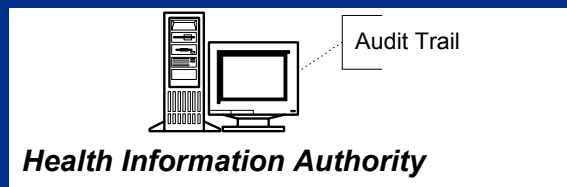
◆ Component 2: Health Information Service Providers (HISP)

- Responsible for the technical measures required to ensure that data is:
 - Appropriately stored and secured
 - Continuously available
- Systematically ensures appropriate:
 - Authentication of users
 - Levels of access
 - User status according to current records
 - Monitoring of record linkage operations



A Global, Distributed Electronic Health Record Management Model

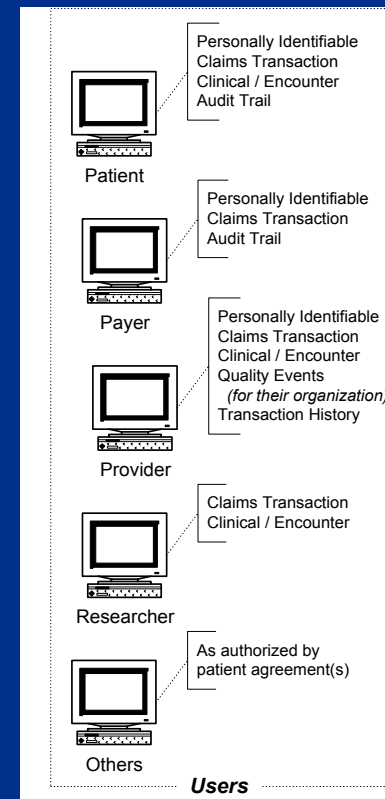
- ◆ Component 3: Health Information Authorities
 - Responsible for establishing organizational practice policy related to the global process
 - Conducts HISP monitoring to ensure compliance with policies and procedures (Audit Trail Data)
 - Establish processes that assign unique, anonymous patient and provider identifiers
 - Ongoing evaluation and monitoring of available technologies for authentication and encryption



A Global, Distributed Electronic Health Record Management Model

◆ Component 4: Users

- Each user possesses different levels of access and silo linkage capability:
 - Patient
 - Payer
 - Provider
 - Researcher
 - Others
- Designed to:
 - Empower patients
 - Protect privacy
 - Create delivery efficiencies





A Global, Distributed Electronic Health Record Management Model

◆ Patient users (Component 4)

- EHR silo linkage capability for viewing:
 - Personally Identifiable Data
 - Claims Transaction Data
 - Clinical / Encounter Data
 - Audit Trail Data
- Ability to contribute information in collaboration with their health care provider(s)
- Capability to submit secure requests for factual corrections to the Health Information Authorities



A Global, Distributed Electronic Health Record Management Model

- ◆ **Payer users (Component 4)**
 - EHR silo linkage capability for viewing:
 - Personally Identifiable Data
 - Claims Transaction Data
 - Audit Trail Data
 - Authorized agents of the patient
 - Ability to contribute compensation and reimbursement information to the claims transaction dataset
 - Responsible for notifying the patient of any unauthorized audit trail records identified



A Global, Distributed Electronic Health Record Management Model

- ◆ **Provider users (Component 4)**
 - EHR silo linkage capability for real time viewing and modification of:
 - Personally Identifiable Data
 - Claims Transaction Data
 - Clinical / Encounter Data
 - Quality Event Data (limited to organizational affiliations)
 - Transaction History Data
 - Designated within patient relationships and authorized accordingly
 - Additional ability to view the EHR in “historical mode” to reconstruct view snapshots in time



A Global, Distributed Electronic Health Record Management Model

- ◆ **Researcher users (Component 4)**
 - EHR silo linkage capability for viewing:
 - Claims Transaction Data
 - Clinical / Encounter Data
 - Access to large groups of patient records within Investigational Review Board (IRB) authorizations
 - Ability to conduct clinical, economic, and epidemiological research
 - without knowing the identity of patients,
 - yet having the capability to uniquely identify study subjects across a wide spectrum of care.



A Global, Distributed Electronic Health Record Management Model

- ◆ **Other users (Component 4)**
 - Provided with access through legal agreements with the patient that are consistent with Health Information Authority policies and procedures
 - May include a diverse offering based upon individualized patient needs



A Global, Distributed Electronic Health Record Management Model

◆ Information “Asset” Considerations

- Juxtaposition of business, societal, and individual needs
 - Venn diagram with overlapping layers
 - Corporate Entities
 - Clinical, claim transaction, and quality event data
 - Society
 - Clinical, public health, and quality event data
 - Individuals
 - Clinical, claim transaction, public health, and personally identifiable data
- Users must agree not to re-assemble data from various sources for uses other than those originally specified



The Future

“The best way to predict the future is to invent it.”

-- Alan Kay