

Using Health IT to Advance Population-Based Quality Measurement in Health Care

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**We Have No Financial Relationships
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To be discussed:

- Ideas and paradigms regarding health information technology (HIT) as applied to population based **performance measurement**.
- An ongoing US project in the US to develop “e-indicators” for “integrated care”.
- Future challenges and research and development priorities.



Some definitions

Population based healthcare:

The application of public health and medical care services to improve the health and well being of a defined target population. There are multiple determinants of population health; healthcare delivery is only one factor.

Healthcare Information Technology (HIT):

The application of computers and other digital technology to the delivery and management of health care and public health services. HIT is a subset of medical informatics.



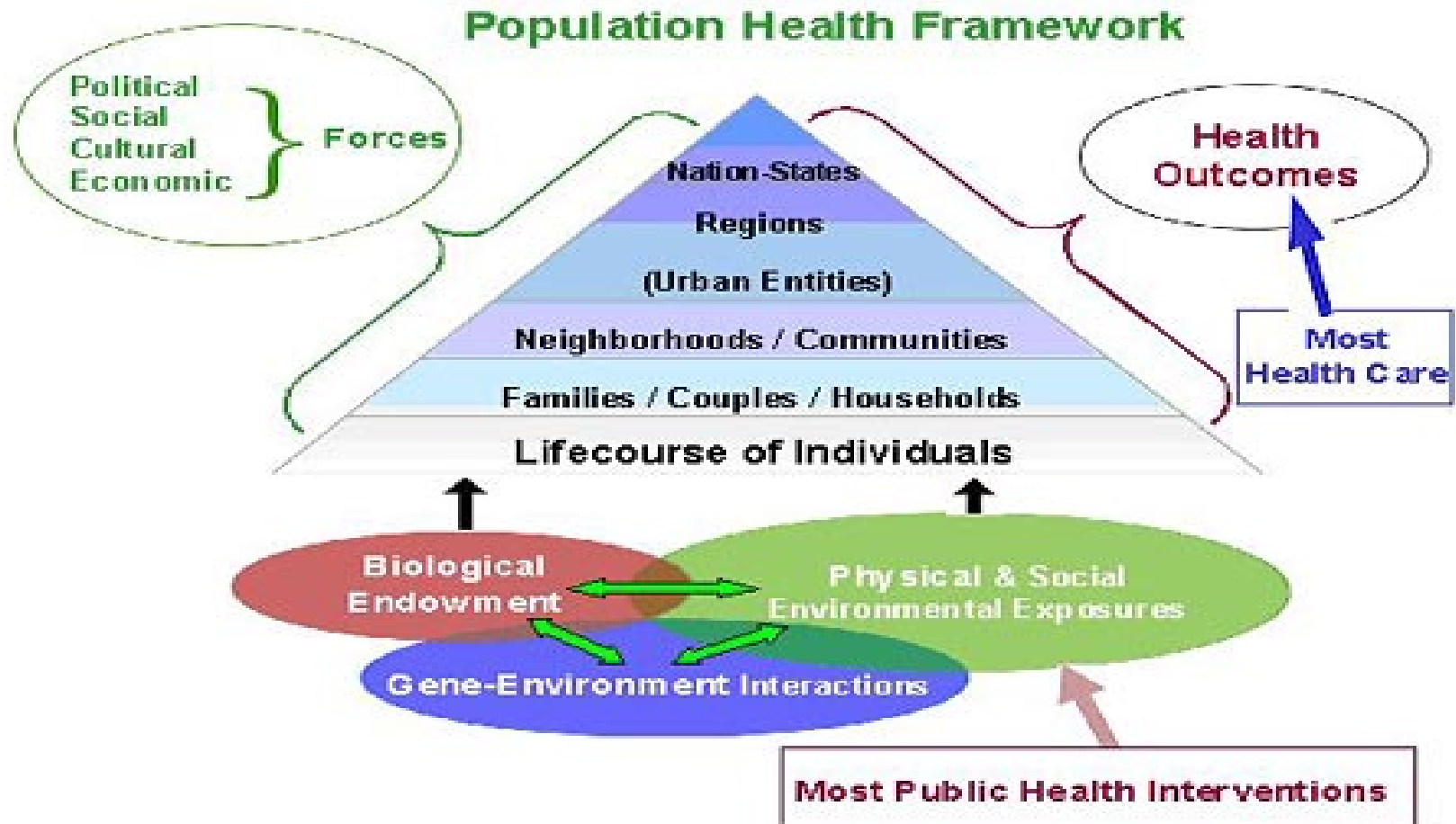
Definitions-2

Health Care Performance Indicators:

Statistical measures that directly or indirectly reflect the performance of individual providers, organizations and systems in maintaining or increasing the well-being of their target population and increasing system efficiency and value.



The multiple components of population health

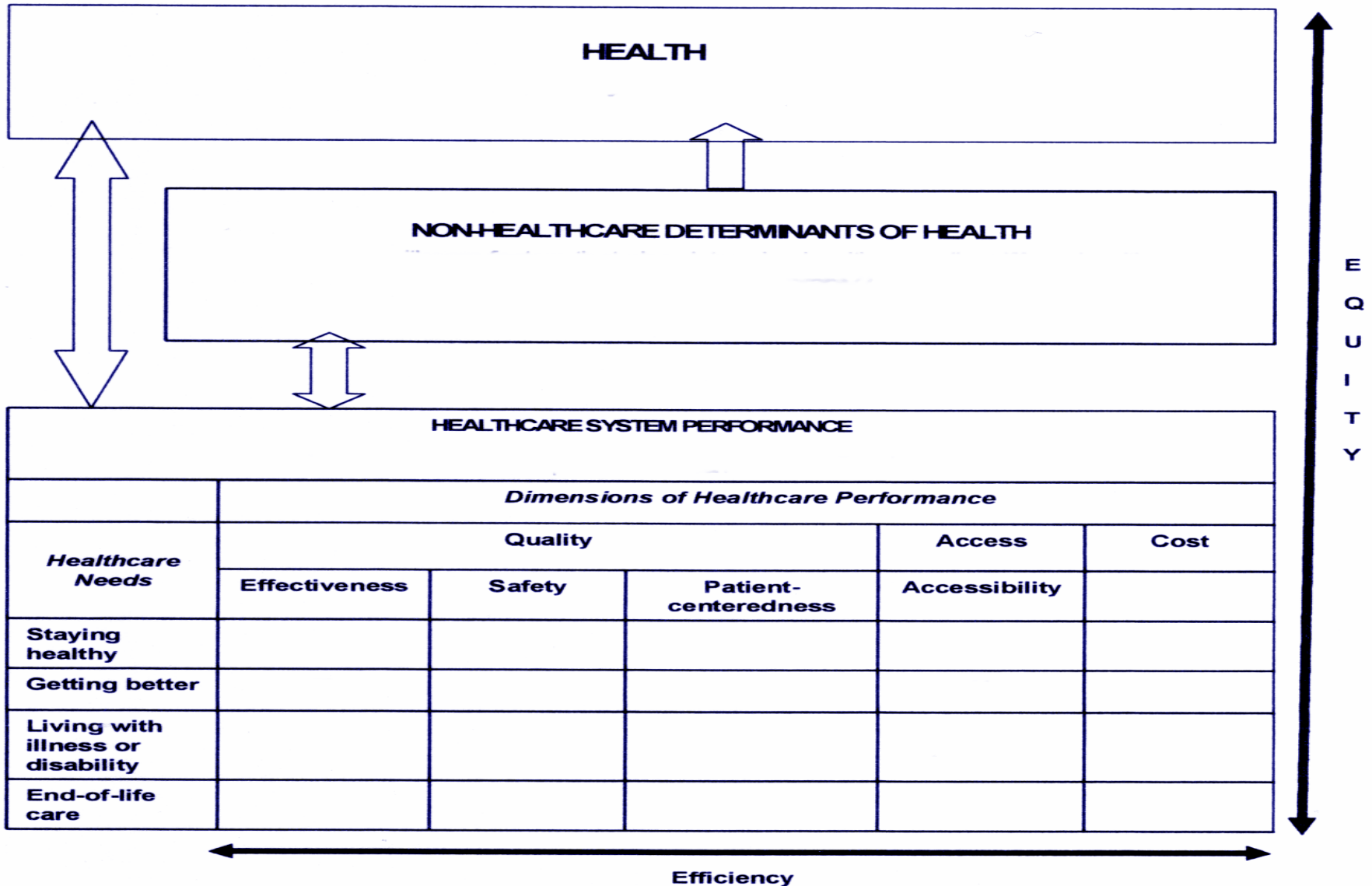


Populations (denominators) of interest

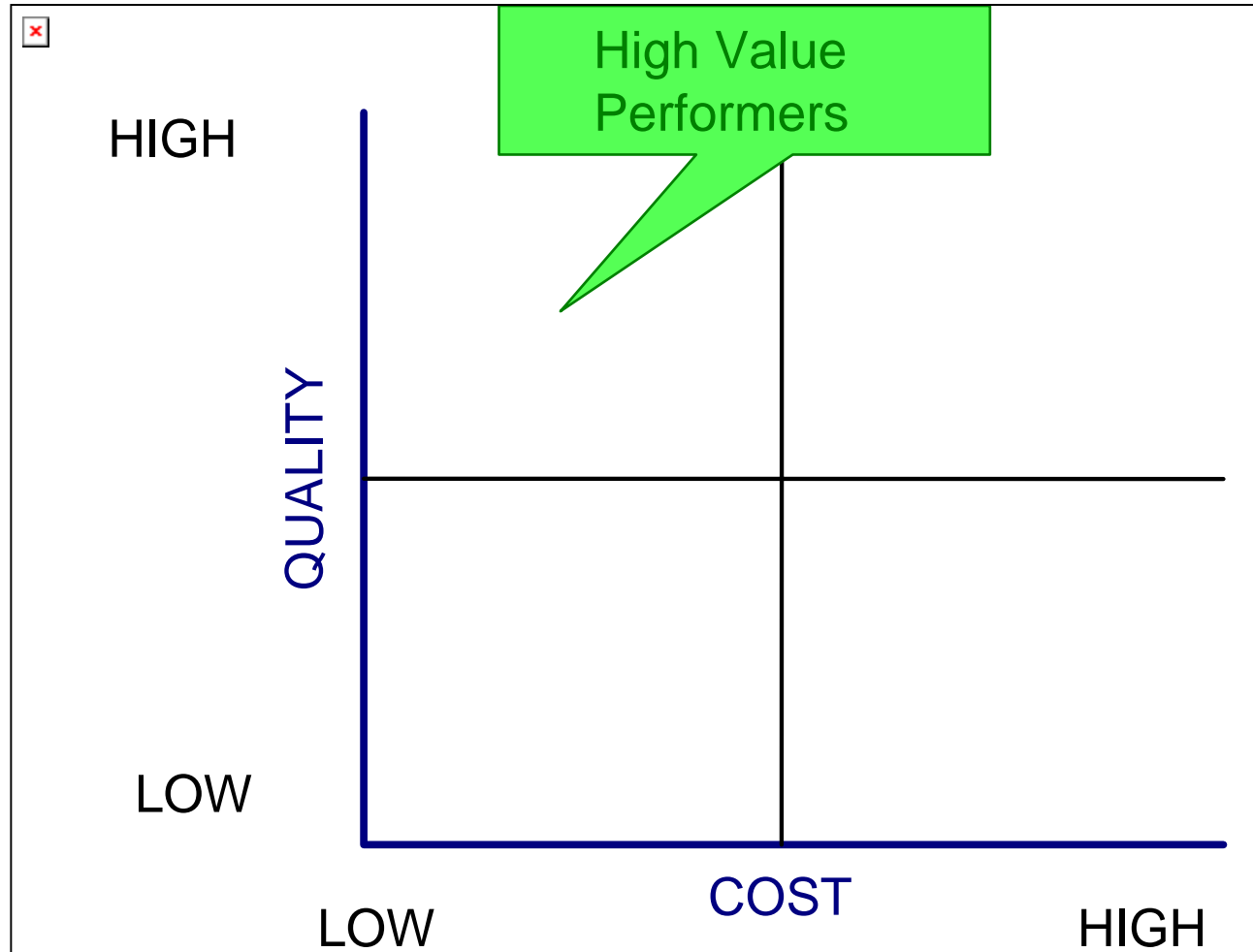
- Persons living in a specific geographic area
- A selected vulnerable population group
 - Social / economic / cultural
 - Disease / age / gender
- Persons in specific health insurance / delivery program
- Persons cared for by a specific provider organization
- Persons cared for by a specific doctor / clinical team



A Paradigm for healthcare performance measurement

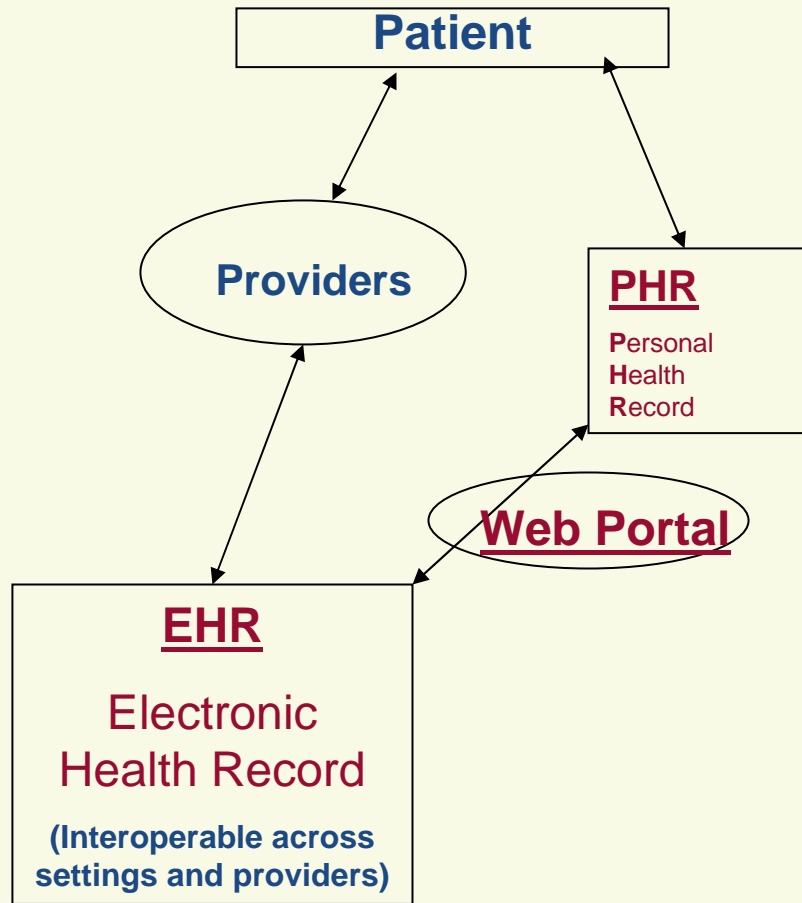


“Value”- Combines the cost and quality dimensions

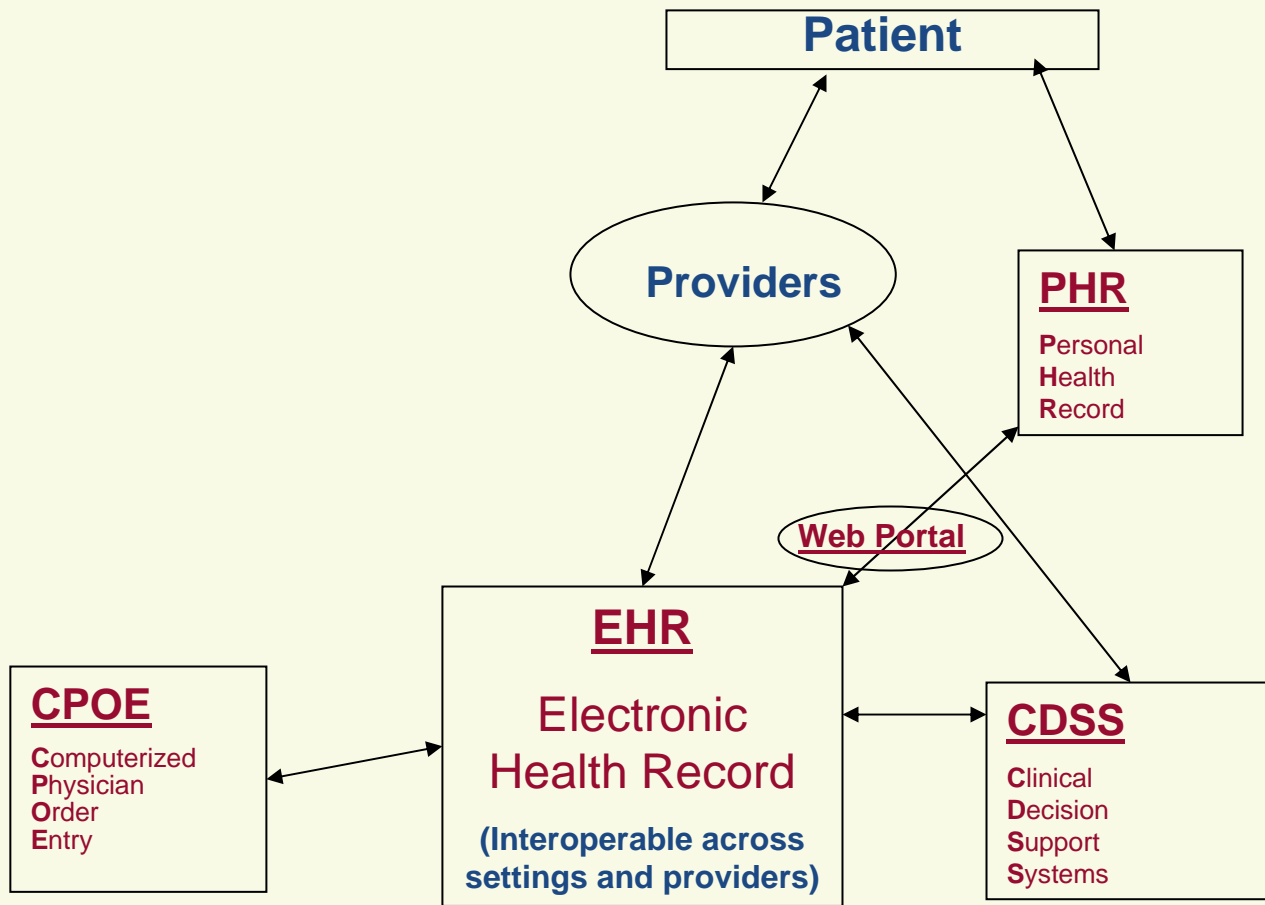


Over the coming decades, Health Information Technology (HIT) will have a profound impact on health care systems and their ability to measure, and improve their performance.

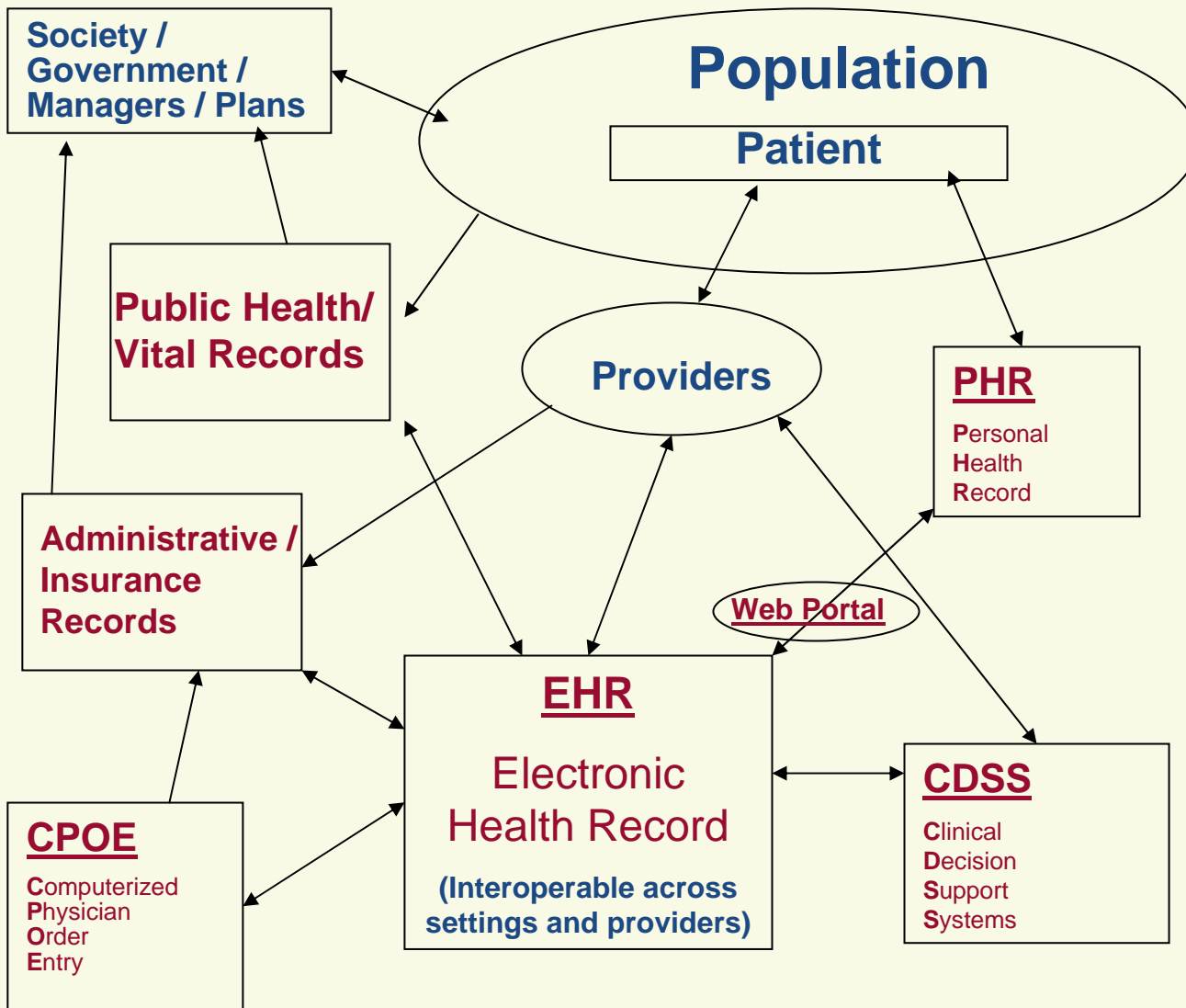




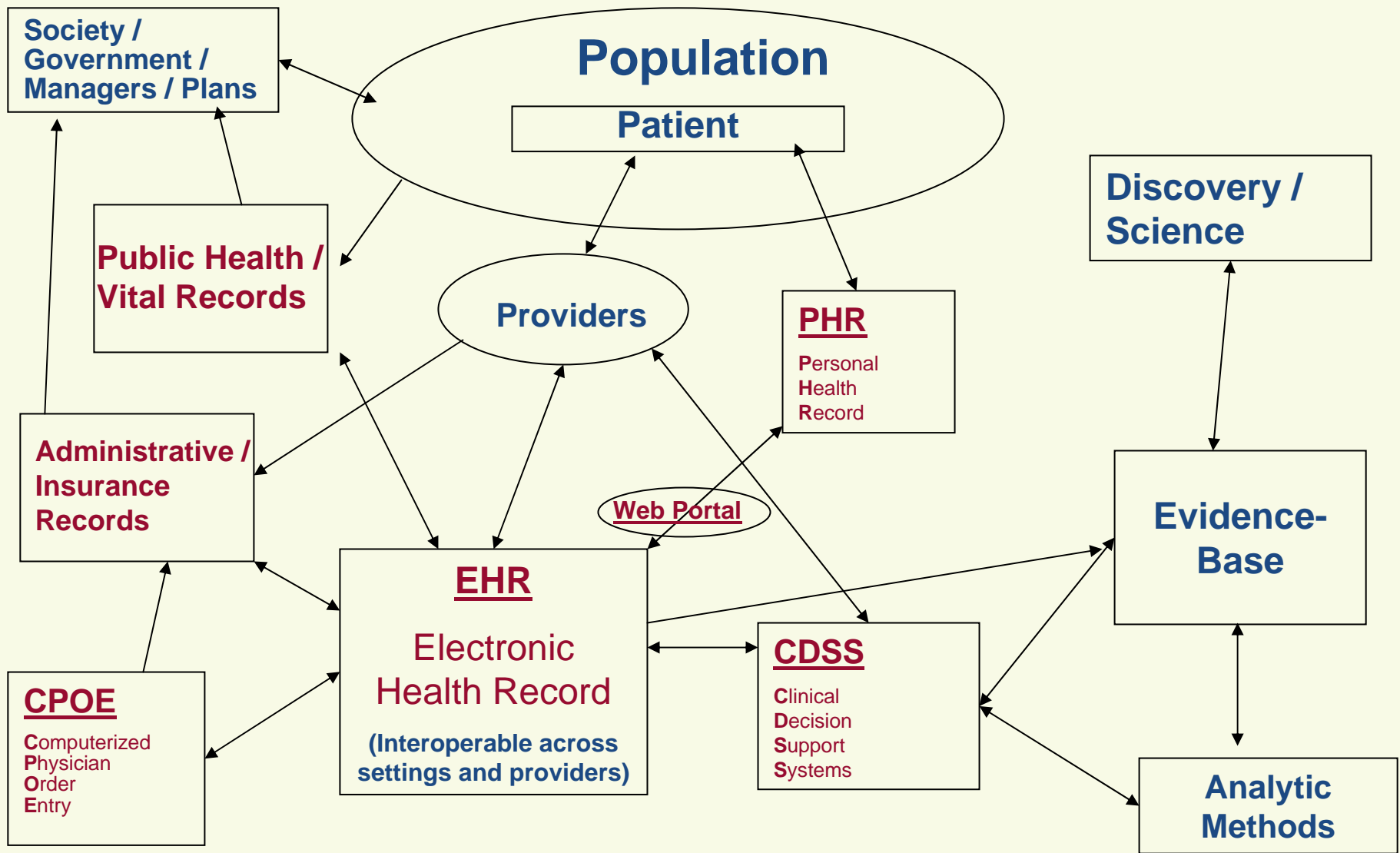
An HIT Enabled “Wired” Healthcare Delivery System - 1



An HIT Enabled “Wired” Healthcare Delivery System - 2



An HIT Enabled “Wired” Healthcare Delivery System - 3



An HIT Enabled “Wired” Healthcare Delivery System - 4

Data sources and types of quality / performance measures

Type of Measure

Data Source: Denominator Process Outcome Pt-Cent. Cost

Electronic / HIT

PH records / registry	X				
Insurance files	X	X	X		X
EHR	X	X	X		X
CPOE		X			
PHR / Web portal		X	X	X	

Non-electronic

Paper medical record		X	X		
Surveys			X	X	



Embracing new HIT capabilities to measure quality in the ambulatory / integrated care sector: The “e-indicator” project

- Goal of ongoing collaborative R&D project at Johns Hopkins and Park Nicollet Institute:

Develop innovative measures of quality that take advantage of the new HIT capabilities and data sources.

- Collaboration involving leading edge “wired” integrated delivery systems: Park Nicollet (MN), Kaiser Permanente (OR), Geisinger (PA), Health Partners (MN) Billings (MT), Dupont/Nemours (DE), Boston CHC network (MA).
- Advisors include key quality groups, NCQA, NQF, AMA, Medicare, VA, ONCHIT, AHRQ, medical specialty societies
- Funded by Commonwealth Fund, Robert Wood Johnson, US AHRQ, Nemours
- Methods include lit review, survey of experts & early adopters, case study, development of starter-set of “e-indicators”.



A proposed framework for HIT based “e-indicators” of quality

Translational

- Translating traditional quality measures (relying on paper records and surveys) for HIT platforms

HIT-supported

- HIT facilitated: measures that can theoretically draw on non-HIT data sources, but actually not operationally feasible outside of HIT
- HIT enabled: measures not possible without HIT

HIT system management

- Measures used to manage and evaluate HIT systems

e-iatrogenesis

- Measures of actual or potential harm caused at least in part by application of HIT (See *JAMIA, Weiner et al, May 2007*)



HIT will transform performance measurement

- e-Indicators will be essential tool for:
 - Provider / clinician teams
 - Organization leadership / management
 - Government / society / public health
 - Outcomes researchers / scientists



Applications of HIT-based performance measures

- Quality improvement / clinical governance for organizations
- Basis of “pay for performance” incentives offered by payer / government
- Basis for community / regional strategic planning



Examples of “e-indicators” of performance using HIT enabled systems

- **Safety measures**

- % of up to date medication allergy files for population
- Rates of adverse medication events
- % of prescribing via e-prescribing with interaction monitoring
- Rate of wrong test or wrong patient “click errors”

- **Access / outreach measures**

- % of patients whose chronic care prescriptions are not refilled or not picked up from pharmacy once prescribed
- % of persons residing in area (previously treated for chronic condition) not under active treatment
- % of persons under treatment for asthma getting care from emergency (A&E) department



Performance “e-indicators” examples - 2

- **Effectiveness**

- **Process**

- % of children visiting clinic that were not checked for immunization status
- % of abnormal lab results reviewed and acted upon by clinician within 48 hours of receipt
- % of patients with diabetes reviewing their Hgb-A1c via web portal
- % of patients with expensive lab or imaging investigator ordered without assessing likely information gain with up to date clinical decision support system (CDSS) module

- **Coordination / Continuity**

- % of all referrals to consultants that result in feedback to primary care doctor with 7 days of visit
- When new primary care doctor is seen % of providers reviewing key sections of EMR before patient is seen



Performance “e-indicators” examples - 3

- **Effectiveness (cont)**

- **Outcomes**

- % of persons in area with advanced / avoidable diseases
 - % of persons with negative outcomes associated with chronic disease measures (e.g., HBP or high Hgb-A1C)

- **Equity**

- Process, outcome or access measures by socio-economic or other special group (geography or insurance status as proxy)
 - Disparities in (risk adjusted) utilization of resources by region, ethnic group etc.

- **Efficiency / Cost**

- Lower than average risk adjusted resource use by health care / provider, administrative unit
 - % of provider units in highest “value” quadrant (i.e., high quality measures and average or below average risk adjusted cost)



Some Advantages of HIT based Quality Measurement

- Some data elements, such as lab values, that are automatically streamed are more accurate and complete
- Abstraction errors due to poor handwriting are reduced
- Can get census, reducing sampling or non-response errors of chart review and surveys
- HIT can create new sources of data, such as “shadow repositories” or “data warehouses” that can be used to measure care processes
- Multiple sources and origination of data can be drawn upon to create comprehensive population based measures



Some Challenges of Measuring Quality through HIT

- Difficult to develop measures from free-text narratives common in EHR/EMR
- Systematic errors of omission or commission possible due to unintended HIT system design
- Noise and errors due to ease of retention of past information ,e.g, cutting-and-pasting from previous encounters, retention of old diagnoses
- Outdated or incorrect algorithms can introduce and perpetuate measurement errors
- Quality of data (accuracy and completeness) that requires ongoing clinician input can be variable



Future issues related to HIT performance measurement

- It will be impossible to focus on all clinical aspects. Thus, we must be careful not to lose sight of “the forest” by focusing only on selected “trees.”
- The process is continuous, it will never be finished.
- We must protect patient confidentiality, but we should not erect unreasonable barriers to beneficial uses of data.
- Good quality is not always less costly. Balancing cost with improved quality will frequently be a challenge

