



# Health Information Technology

## Transforming the Health Care System



**Charles Kennedy, M.D.**

**VP Health Information & Technology , WellPoint, Inc.**

**H.I.T. Policy Committee Insurance Industry Representative**

# Expectations Vs Cold-Hard Reality

## Expectations

**First Consulting Group (among others) completes white paper indicating net benefits of Health Information Technology worth \$39 -\$47 billion annually in care savings**

**Center for Information Technology Leadership estimates deployment of ambulatory health record worth \$44B in savings**

**Office of the National Coordinator for Health Information Technology references studies which indicate savings from Health Information Technology deployment worth \$78-\$112 billion annually**

## Real World Results

### 1. Medicare Chronic Care Pilot

- Running for over 2 years
- Incentives, chronic disease management strategies
- Many electronic records
- NO EVIDENCE OF INCREMENTAL VALUE

**2. According to a study published in the *Archives of Internal Medicine* using 1.8 billion records with around 20% electronic, there was no difference between paper and electronic records on 14 of 17 axes, and splits on the other 3.**

**3. BCBS usage of heavily promoted PHRs is currently 0.2%**

**4. NRC/NAS 2009 study says current systems do not work and will move the industry backwards**

# HIT Opportunity #1: Support Highest Quality Care For All Americans

**Optimize actual care delivery; align with best practices, comparative effectiveness, and other clinical evidence sources**

## % of Recommended Care Received

- 64.7% Hypertension**
- 63.9% Congestive Heart Failure**
- 53.9% Colorectal Cancer**
- 53.5% Asthma**
- 45.4% Diabetes**
- 39.0% Pneumonia**
- 22.8% Hip Fracture**

## % of Recommended Pediatric Care Received

- 67.6% Acute Medical Care**
- 53.4% Chronic Condition Care**
- 40.7% Preventive Care**

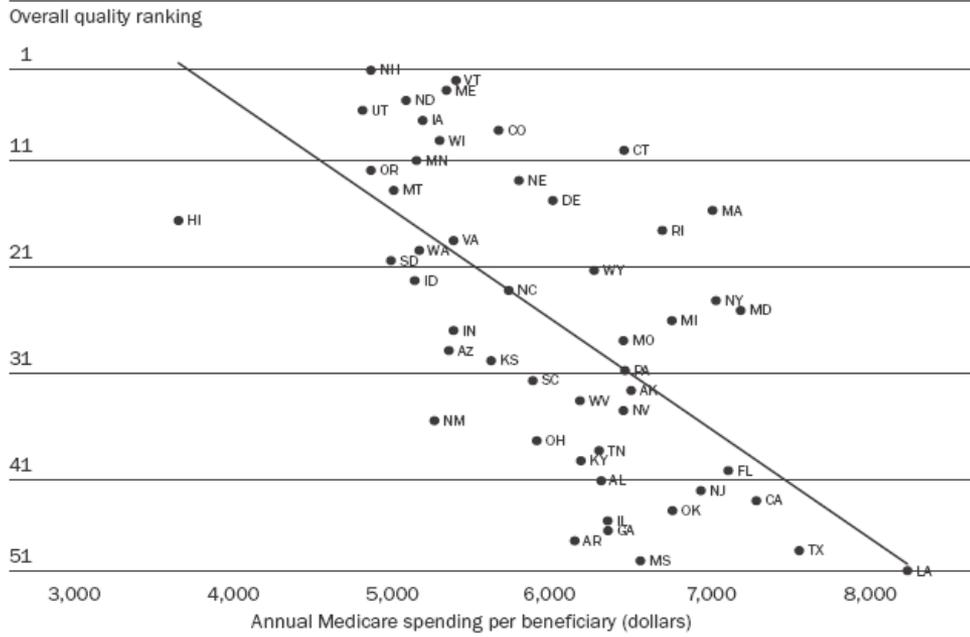


Source: McGlynn, E.A, et. al. "The Quality of Health Care Delivered to Adults in the United States." New England Journal of Medicine 348 (26): 2635-45 (2003); Mangione-Smith R, DeCristofaro AH, Setodji CM, Keeseey J, Klein DJ, Adams JL, Schuster MA, McGlynn EA. The Quality of Ambulatory Care Delivered to Children in the United States The New England Journal of Medicine, Vol. 26, No. 5, Sept 2007, pp. 644-649

# HIT Opportunity #2: Improve Efficiency of Care Delivery

**Landmark study demonstrated that higher cost regions did not have higher use of evidence based interventions—Can we reduce cost and improve quality simultaneously?**

**EXHIBIT 1**  
**Relationship Between Quality And Medicare Spending, As Expressed By Overall Quality Ranking, 2000–2001**



**SOURCES:** Medicare claims data; and S.F. Jencks et al., "Change in the Quality of Care Delivered to Medicare Beneficiaries, 1998–1999 to 2000–2001," *Journal of the American Medical Association* 289, no. 3 (2003): 305–312.

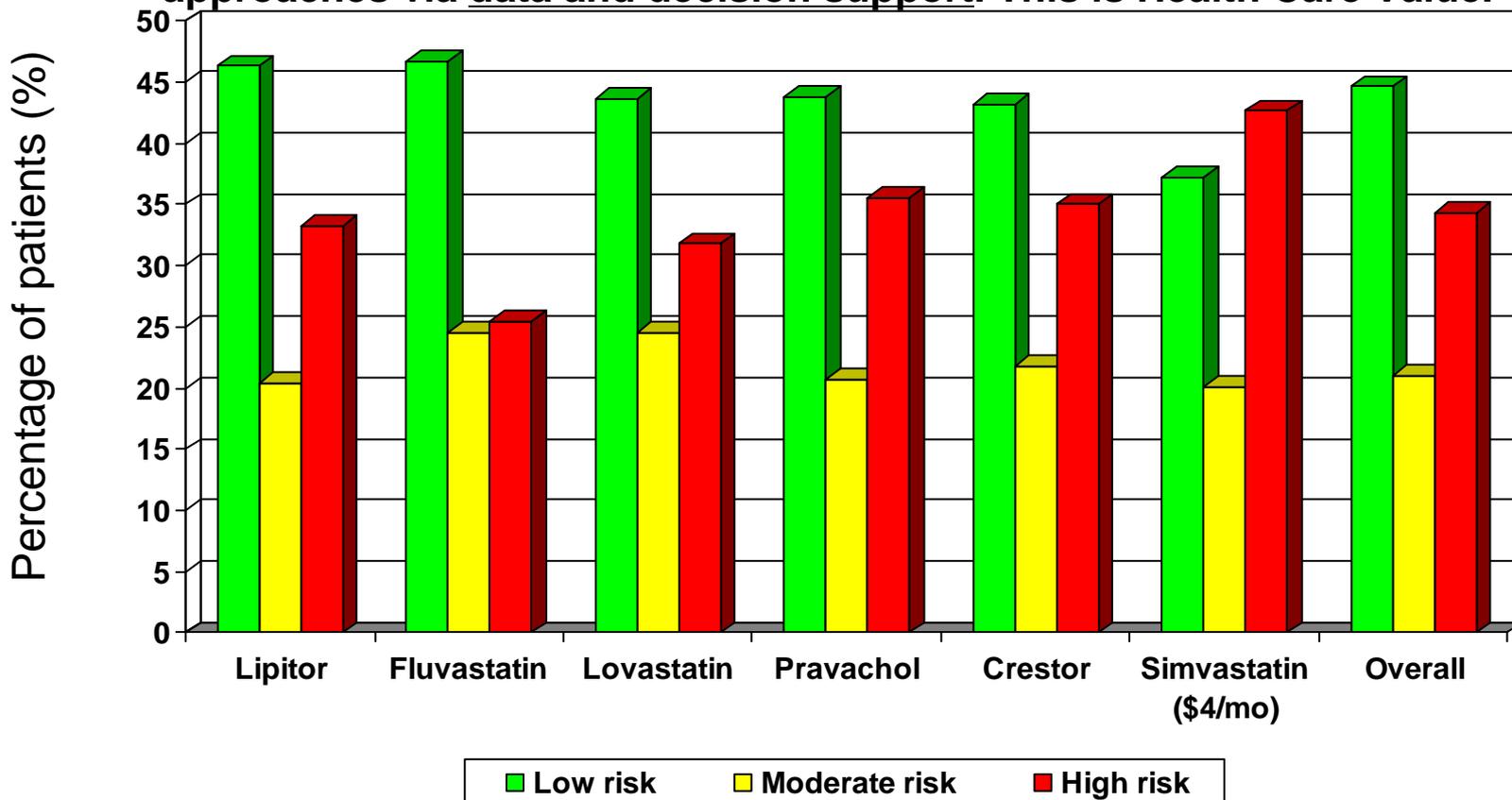
**NOTE:** For quality ranking, smaller values equal higher quality.

## Health Affairs study<sup>4</sup> of CMS costs

- Increased spending did not result in increased use of proven, evidence based, effective care or health care quality
- Primary drivers of this challenge felt to be increased use of specialists in high cost areas
- Increased use of specialists resulted in larger care teams and highlighted care coordination needs and failure of communication across large numbers of physicians caring for patients

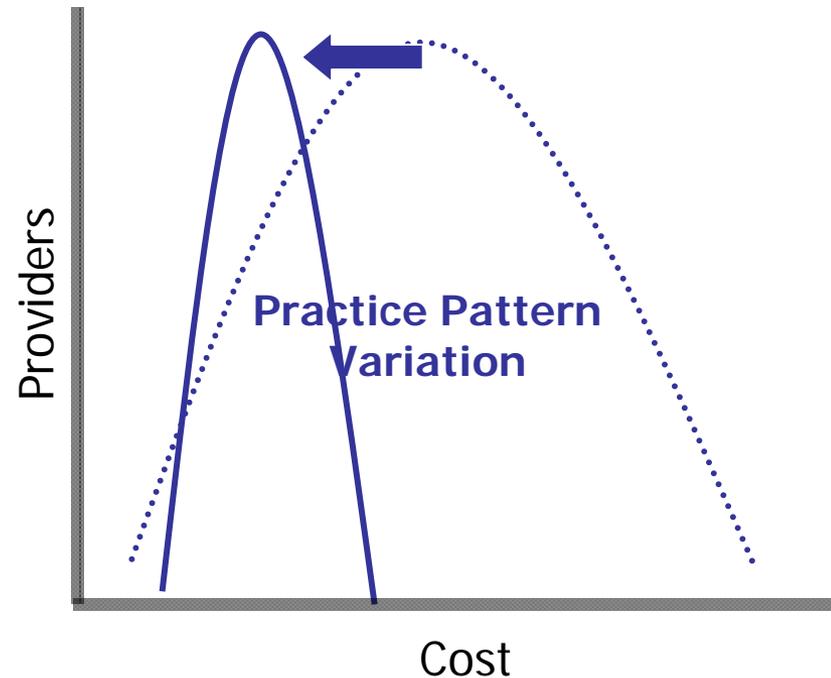
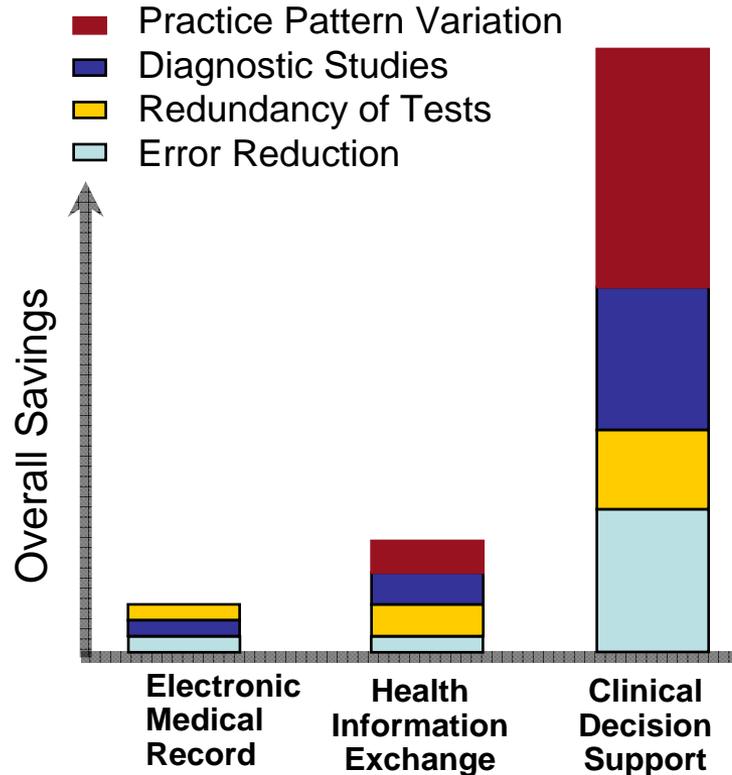
# Real World Example: Statin Class of Drugs

A high % of patients in the “Low/Moderate risk” category receive branded, statins that cost 10Xs as much while a high % of high risk patients receive \$4/month simvastatin. The opportunity is to systematically drive patients to lower cost, high quality approaches via data and decision support. This is Health Care Value.



# Health IT Path to Industry Transformation: Clinical Decision Support

**Electronic representations of patient health and health history linked to algorithms derived from comparative effectiveness can help maximize health care value.**



**Health IT can impact Health Care cost  
and quality  
only by focusing on**

***Individual Patients***

**not**

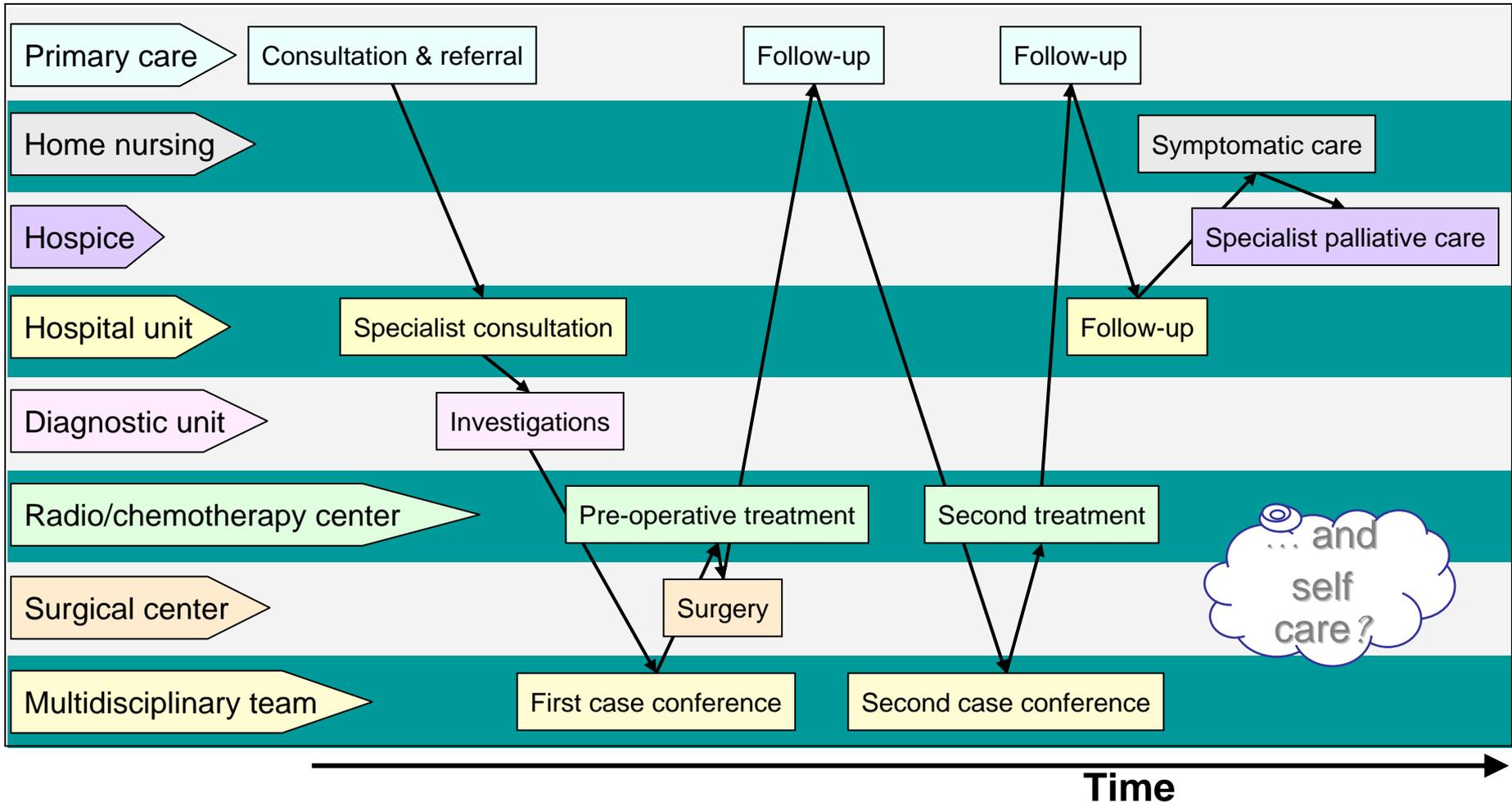
***Health Care Institutions***

## The Historical Care Process: “I have a problem.”

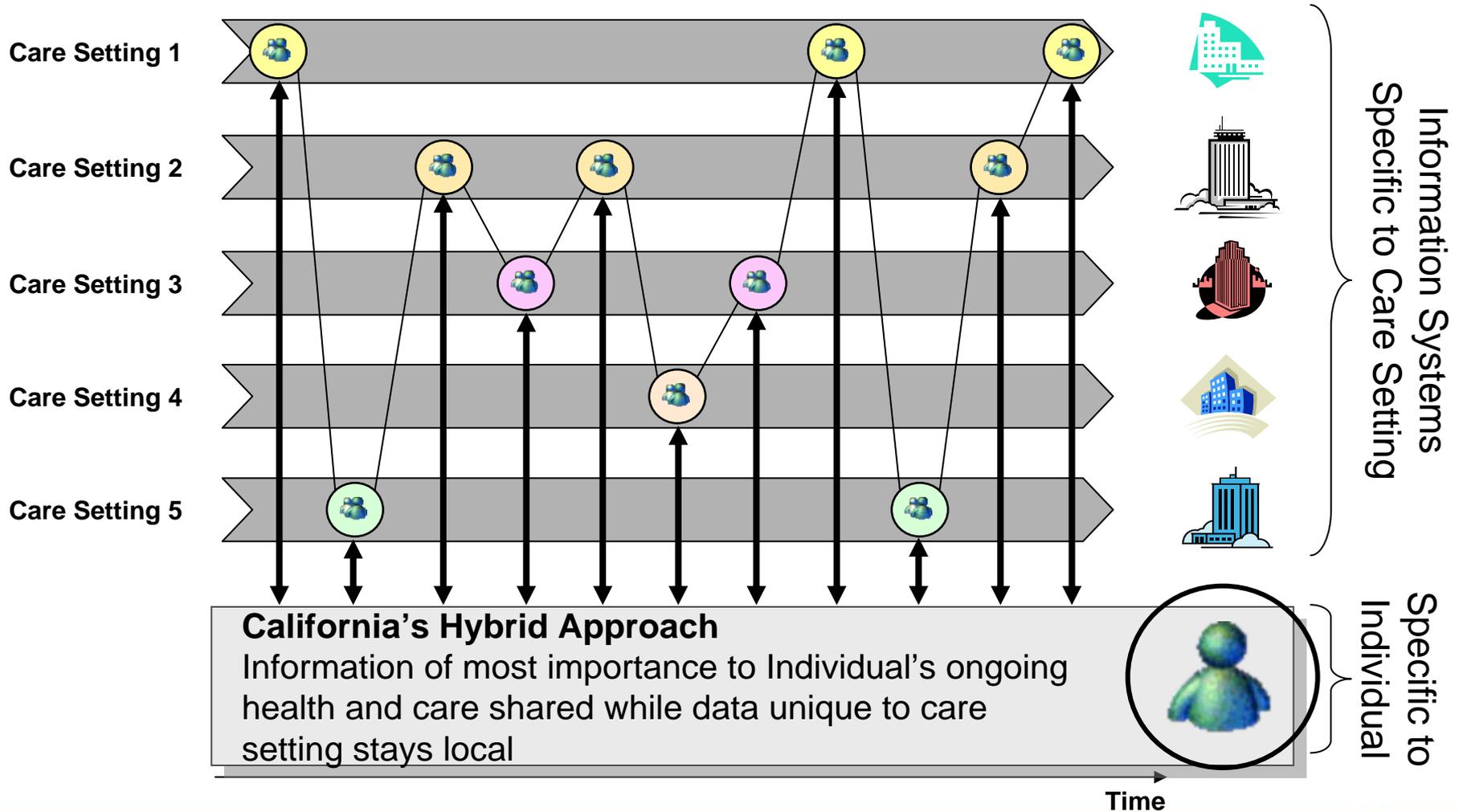
Go to a doctor in a clinic  
or hospital



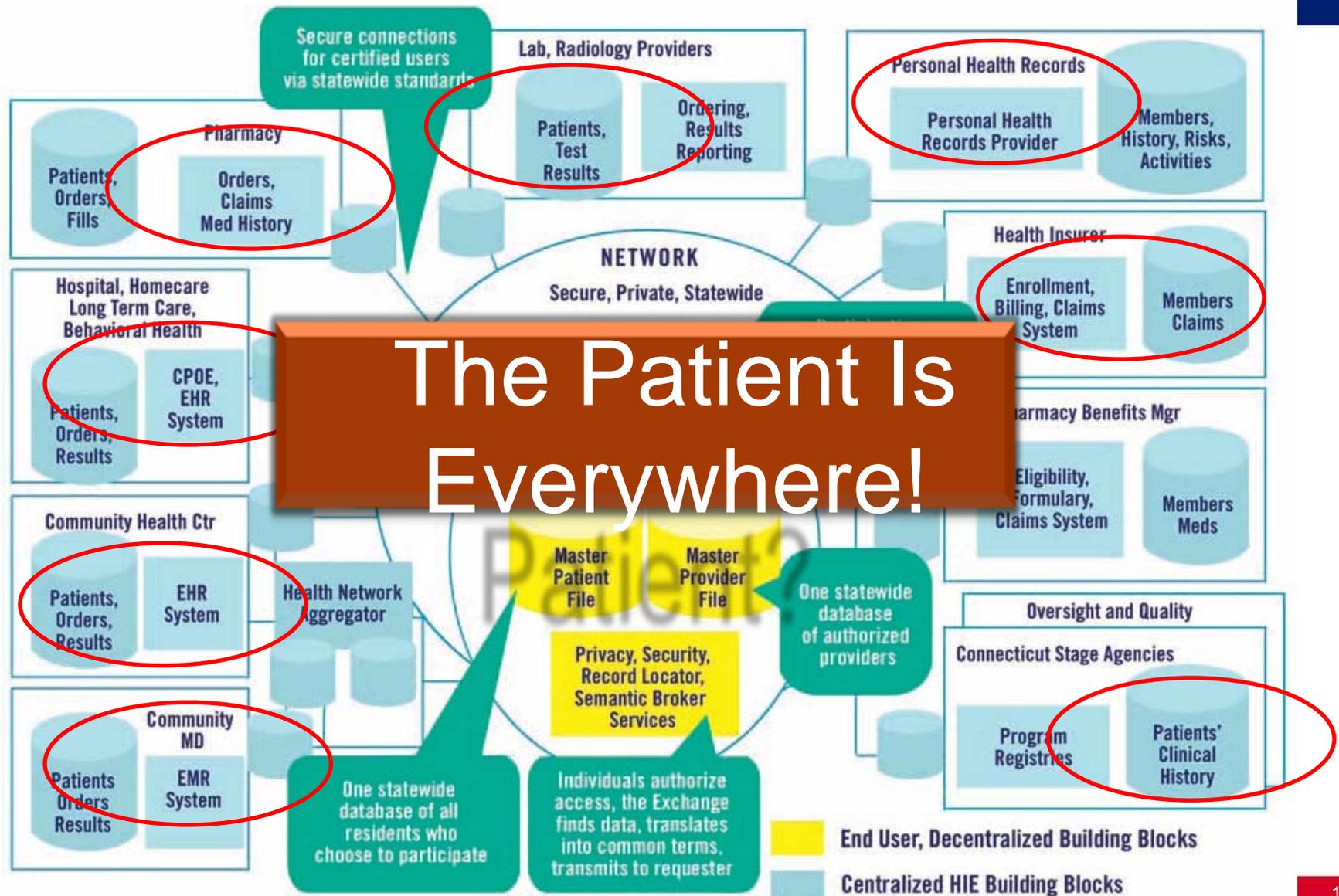
# The Current Care Process – A Typical Cancer “Journey”



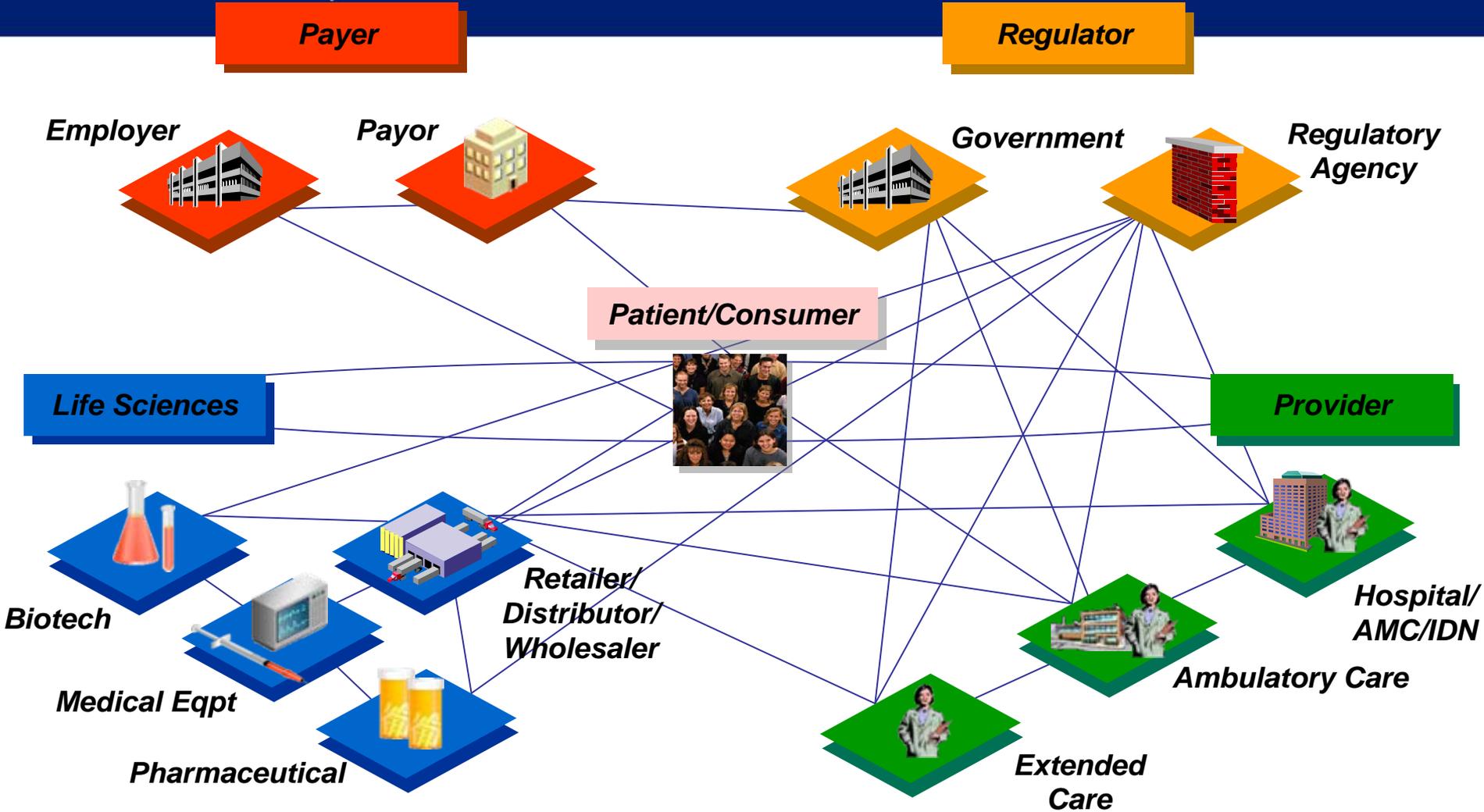
# The Individual Health System California's HIE Operational Plan



# A Federated Approach: Where Is the Patient?



# Institution Centric Approach Makes the Patient an Afterthought



# Government Stimulus Bill: Accelerating Deployments



- **Invests \$1.1 Billion** for Comparative Effectiveness Research-
- **Invests \$38 billion** in health IT infrastructure and Medicare-Medicaid incentives to doctors and hospitals for health IT use
  - Physicians eligible for **\$40,000 to \$65,000** over 5 years for **demonstrating meaningful use of health IT**
  - PWC estimates average hospital will receive \$6.1 million dollars in Health I.T. assistance
- Requires Federal government to finalize data standards by 2010 to facilitate electronic exchange of health information
- Strengthens Federal privacy and security law to protect identifiable health information from misuse
- IFR and NPRM developed which specific Federal governmental policy as to how to qualify for the funding
- Requires the creation of an integrated record on every American *individual*

## The Federal Government has specific objectives through the use of Health I.T. for Health Care Value:

### Prevention, and management, of chronic diseases

- A million heart attacks and strokes prevented
- Heart disease no longer the leading cause of death in the US

### Medical errors

- 50% fewer preventable medication errors

### Health disparities

- The racial/ethnic gap in diabetes control halved

### Care Coordination

- Preventable hospitalizations and re-admissions cut by 50%

### Patients and families

- All patients have access to their own health information
- Patient preferences for end of life care are followed more often

### Public health

- All health departments have real-time situational awareness of outbreaks<sub>14</sub>

# Fundamental Challenge: Uncertainty



## National Academy of Science Report 2/09

- “Current efforts aimed at nationwide deployment of health care IT are not sufficient” and “may even set back the cause. Specifically, success in this regard will require greater emphasis on providing cognitive support for health care providers and for patients and family caregivers”

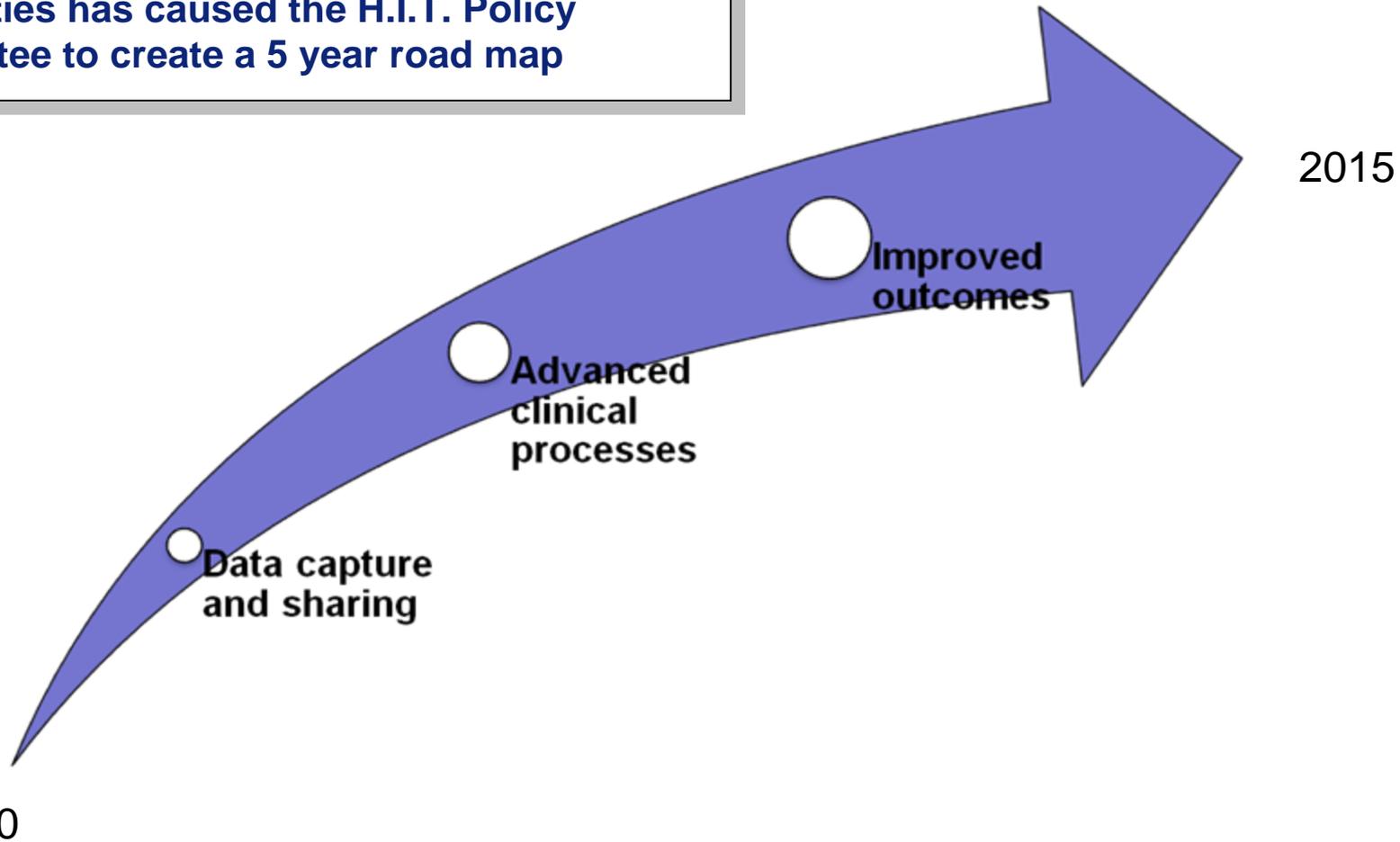
## David Blumenthal article in NEJM 3/09

- “Congress apparently sees HIT — computers, software, Internet connection, telemedicine — not as an end in itself but as a means of improving the quality of health care, the health of populations, and the efficiency of health care systems.
- “Most commercially available systems do not have clinical decision support nor good quality improvement components”

# Health IT Road Map to Value

## *Achieving Meaningful Use of Health I.T.*

The lack of decision support and quality improvement capabilities has caused the H.I.T. Policy committee to create a 5 year road map



\$1 billion in RFIs by CMS

# Health IT Market Evolution

Capabilities for health care value from Health I.T.	<b>Capture</b> data from source systems and display-- Interoperability	<b>Understand</b> the data in the context of the patient's clinical status Ontologies	<b>Apply</b> evidence base and business rules to data	<b>Inform</b> patient and doctor to take action as care occurs
Claim Data	<ul style="list-style-type: none"> <li>• WLP MMHp</li> <li>• E-Prescribing-- AllScripts, MedPlus, Prematics...</li> <li>• CalRHIO</li> <li>• Google Health</li> </ul>	<ul style="list-style-type: none"> <li>• RHI</li> <li>• ActiveHealth</li> </ul>	<ul style="list-style-type: none"> <li>• RHI</li> <li>• ActiveHealth</li> <li>• E-Prescribing</li> </ul>	E-Prescribing
Clinical Data	<ul style="list-style-type: none"> <li>• CCHIT Certified EMRs               <ul style="list-style-type: none"> <li>– E Clinical Works,</li> <li>– United's Care Tracker</li> <li>– EPIC</li> </ul> </li> <li>• Most RHIOs</li> <li>• Interface companies               <ul style="list-style-type: none"> <li>• Orion</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• Kaiser KP Connect with Dz Registry</li> <li>• NY Health Information Exchange</li> </ul>	
Integrated clinical and claim data	<ul style="list-style-type: none"> <li>• MS HealthVault</li> <li>• WellPoint's CIP</li> </ul>	WellPoint's CIP	WellPoint's CIP	WellPoint's CIP
Resulting Record	Unassembled jig saw puzzle-- narrow impacts to cost/quality	Assembled puzzle-- cost and quality impacts likely	Actionable data to improve cost and quality	Transformed health care



# PHR Jig Saw Puzzle—Adoption & Value Challenges

Without sophisticated data management, what is delivered is a “data dumpster”.

There is recognition that some conditions have been reported more than once, however there is no logic to combine any of the condition entries that might actually be a single clinical issue

See entries regarding Gallstone and Gallbladder Inflammation with Gallstone and abdominal pain. These are all one clinical event with variation due to coding. Single best record deals with this issue effectively.

No notation of current (active) versus resolved. Information is not processed; it is simply captured and displayed

MyHealth Record

Visits | Conditions | Medications | Allergies | Surgeries | Immunizations | Tests | Coverage | Basics

Please review the following list of health conditions to ensure that it is complete and accurate. You may edit any condition, including moving a condition from being "current" to "past" by clicking on it. To see if any potential conflicts between your current conditions and your current medications exist, click 'check interactions'.

add condition	check interactions	Health Record summary	how to
<b>Current Health Conditions</b>		<b>Date First Diagnosed▼</b>	
Click on an item to edit, delete or view related information.			
<a href="#">Acute Allergic Pinkeye</a>			11/19/2008
<a href="#">Left Lower Quadrant Abdominal Pain</a>			11/19/2008
<a href="#">Anal fissure</a>			11/19/2008
<a href="#">Dizziness and giddiness symptoms</a> (2 entries)			11/11/2008
<a href="#">Fever</a> (3 entries)			07/16/2008
<a href="#">Breast Lump</a> (2 entries)			05/12/2008
<a href="#">Abnormal Breast Xray</a>			05/12/2008
<a href="#">Diverticulosis</a> (2 entries)			04/22/2008
<a href="#">Internal Hemorrhoids</a>			04/22/2008
<a href="#">Nausea</a> (2 entries)			03/20/2008
<a href="#">Acid Reflux (GERD)</a> (3 entries)			03/10/2008
<a href="#">Acute pharyngitis</a> (2 entries)			10/30/2007
<a href="#">Left Upper Quadrant Abdominal Pain</a>			09/06/2007
<a href="#">Abdominal or Pelvic Mass or Swelling</a>			09/06/2007
<a href="#">Hernia</a> (3 entries)			08/16/2007
<a href="#">Gallstones and Gallbladder Inflammation</a> (2 entries)			08/16/2007
<a href="#">Gallstones</a> (3 entries)			08/16/2007
<a href="#">Abdominal Pain</a> (8 entries)			08/15/2007
<a href="#">Diaphragmatic hernia without mention of obstruction or gangrene</a> (2 entries)			08/15/2007
<a href="#">Umbilical Hernia</a>			08/15/2007
<a href="#">Generalized abdominal pain</a> (4 entries)			08/13/2007
<a href="#">Pain above Stomach</a> (9 entries)			08/13/2007
<a href="#">Arm or Leg Pain</a> (5 entries)			06/19/2007
<a href="#">Broken Toe, One or More, without Skin Tear</a> (6 entries)			06/19/2007
<a href="#">Fluid in the Middle Ear</a>			04/16/2007
<a href="#">Hair Loss</a>			04/03/2007
<a href="#">Poor Nutrient Absorption After Surgery</a> (2 entries)			04/03/2007
<a href="#">Obesity</a>			04/03/2007
<a href="#">Ear discharge</a>			03/14/2007
<a href="#">Acute Middle Ear Infection with Mucus</a>			03/14/2007
<a href="#">Asthma</a>			08/04/2006
<a href="#">Tear of Medial Knee Cartilage or Meniscus</a>			08/04/2006

# WellPoint Clinical Integration Project

**Integrating clinical and claim data to create a comprehensive, shared clinical and financial profile for patient, doctor, and other clinical support staff**

- A Personal Health Record (PHR) for the patient
- An electronic health record and ePrescribing
- A data exchange infrastructure allowing health coaches and physicians to use a common record
- A rules engine with evidence based medicine rules and benefit optimization rules
- A reporting infrastructure that supports P4P, QCPI, and comparative effectiveness research



## Patient Management

Create New Progress Note

Write an Order

Write a Prescription

Make a Referral

Medication & DME List

View Vital Signs ▶

View Test Results ▶

View All Health Events

Scheduling/Billing ▶

References ▶



**Theodore Smith** Gender: Male Birth Date: 08 November 1931 Age: 77 yr MRN: PER100000194  Choose New Individual

### Recent Conditions

Last Update	Condition	Source
21 Sep 2009	<a href="#">Urinary Tract Infection</a>	
21 Sep 2009	<a href="#">Gastritis</a>	
21 Sep 2009	<a href="#">Atrial Fibrillation</a>	
21 Sep 2009	<a href="#">Hyperlipidemia</a>	
21 Sep 2009	<a href="#">Osteoarthritis - Knee</a>	
21 Sep 2009	<a href="#">Benign Hyperplasia Prostate, Localized</a>	
21 Sep 2009	<a href="#">Diabetes Mellitus - Type II</a>	
21 Sep 2009	<a href="#">Hypothyroidism</a>	
21 Sep 2009	<a href="#">Arthritis</a>	
21 Sep 2009	<a href="#">Hypercholesterolemia</a>	

[More...](#)

### Health Indicators

Goal	Alert
<a href="#">Adult Varicella Immunization</a>	
<a href="#">Annual DRE Screening Status Unknown</a>	
<a href="#">Annual Influenza Immunization</a>	
<a href="#">Annual Intraocular Pressure Test</a>	
<a href="#">Annual LDL Cholesterol Exam</a>	
<a href="#">Annual Pneumococcal Immunization</a>	
<a href="#">Annual Prostate-Specific Antigen (PSA) Exam Screening</a>	
<a href="#">Colorectal Cancer Screening</a>	
<a href="#">HbA1c &lt;7%</a>	
<a href="#">HEDIS Annual Influenza Immunization Compliance</a>	

[More...](#)

### Allergies

Allergen	Source
<a href="#">Sulfa Antibiotics (Allergy)</a>	

### Current Medications

Product	Source
<a href="#">Actos Oral Tablet 30 MG</a>	
<a href="#">Aleve Oral Tablet 220 MG</a>	
<a href="#">Cardizem CD Oral Capsule Extended Release 24 Hour 180 MG</a>	
<a href="#">Lipitor Oral Tablet 20 MG</a>	
<a href="#">Lisinopril Oral Tablet 10 MG</a>	
<a href="#">Procardia XL Oral Tablet Extended Release 24 Hour 60 MG</a>	
<a href="#">Synthroid Oral Tablet 112 MCG</a>	
<a href="#">Zantac Oral Tablet 150 MG</a>	

### Recent Tests/Exams/Treatments

Date	Service	Alert	Source
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### Appointments/Visits

Date	Service	Service Provider	Source
10 Oct 2009 02:30 PM	<a href="#">Physician Office/Outpatient</a> <a href="#">Encounter Established Patient</a>	Baltimore health care P.C. Butler, Alfred	
09 Oct 2009 02:30 PM	<a href="#">Physician Office/Outpatient</a> <a href="#">Encounter Established Patient</a>	Baltimore health care P.C. Butler, Alfred	
08 Oct 2009 02:30 PM	<a href="#">Physician Office/Outpatient</a> <a href="#">Encounter Established Patient</a>	Baltimore health care P.C. Butler, Alfred	
07 Oct 2009 02:30 PM	<a href="#">Physician Office/Outpatient</a> <a href="#">Encounter Established Patient</a>	Baltimore health care P.C.	



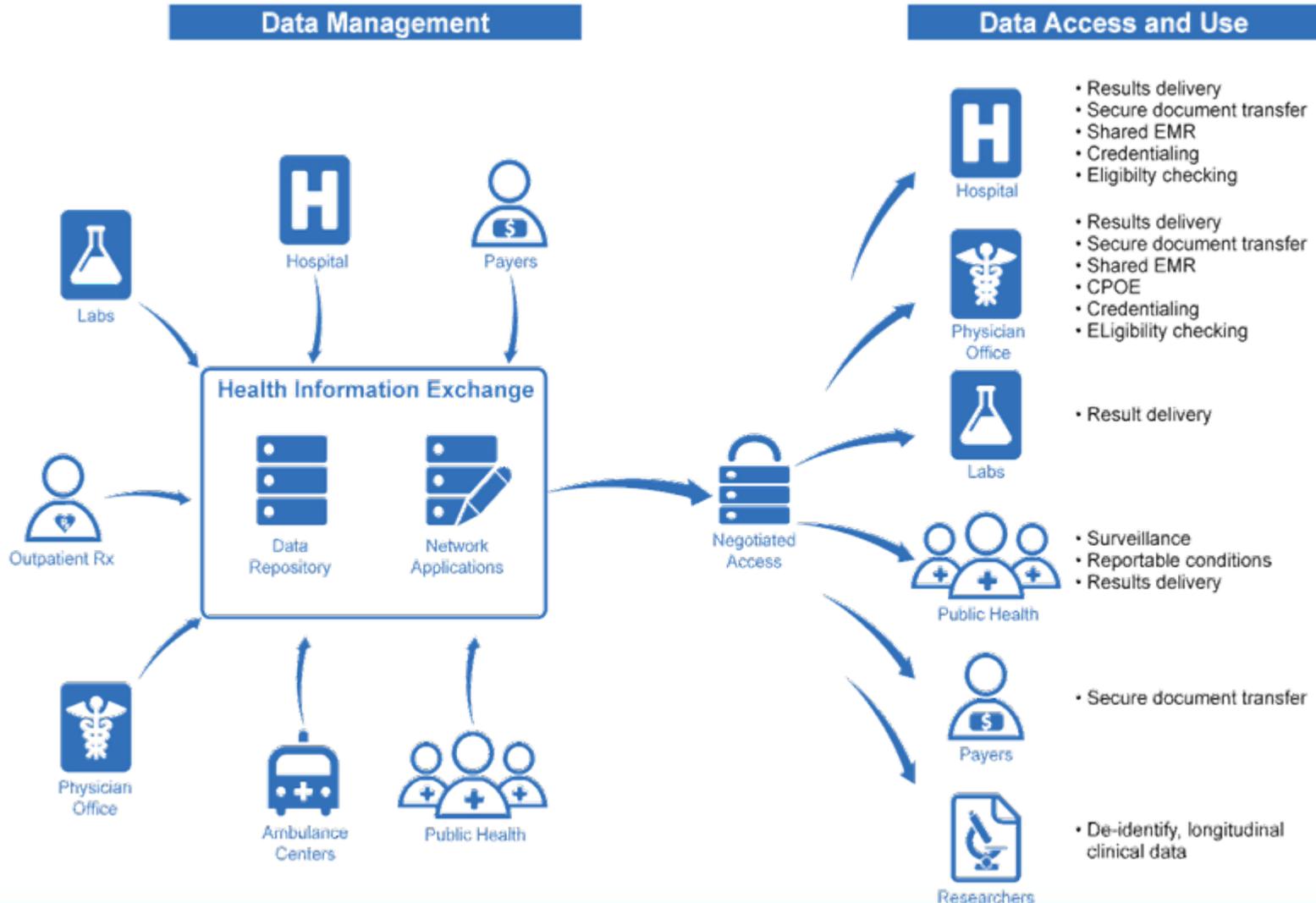
## Public Health Services



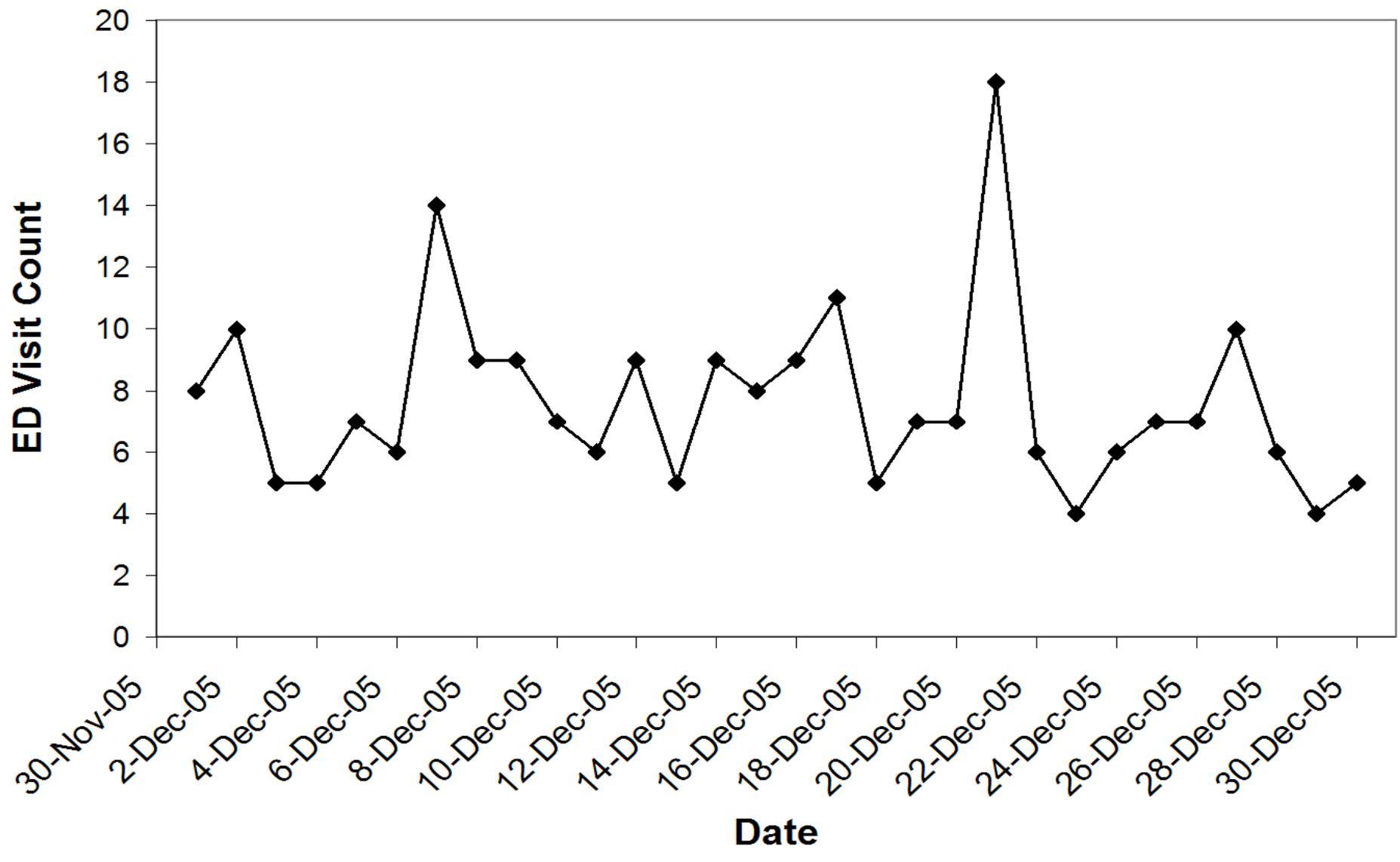
**The Regenstrief Institute and IHIE (Indianapolis Health Information Exchange or IHIE is the oldest and most mature health information exchange. It collaborates with public health agencies and providers to create the nations largest, most sophisticated and most integrated public health infrastructure**

- Detect acts of bioterrorism, disease outbreaks, and other public health emergencies through the monitoring of real-time data from emergency departments across the state.
- Monitors laboratory results and delivers reportable results to public health authorities
- Delivers highly targeted public health alerts to providers

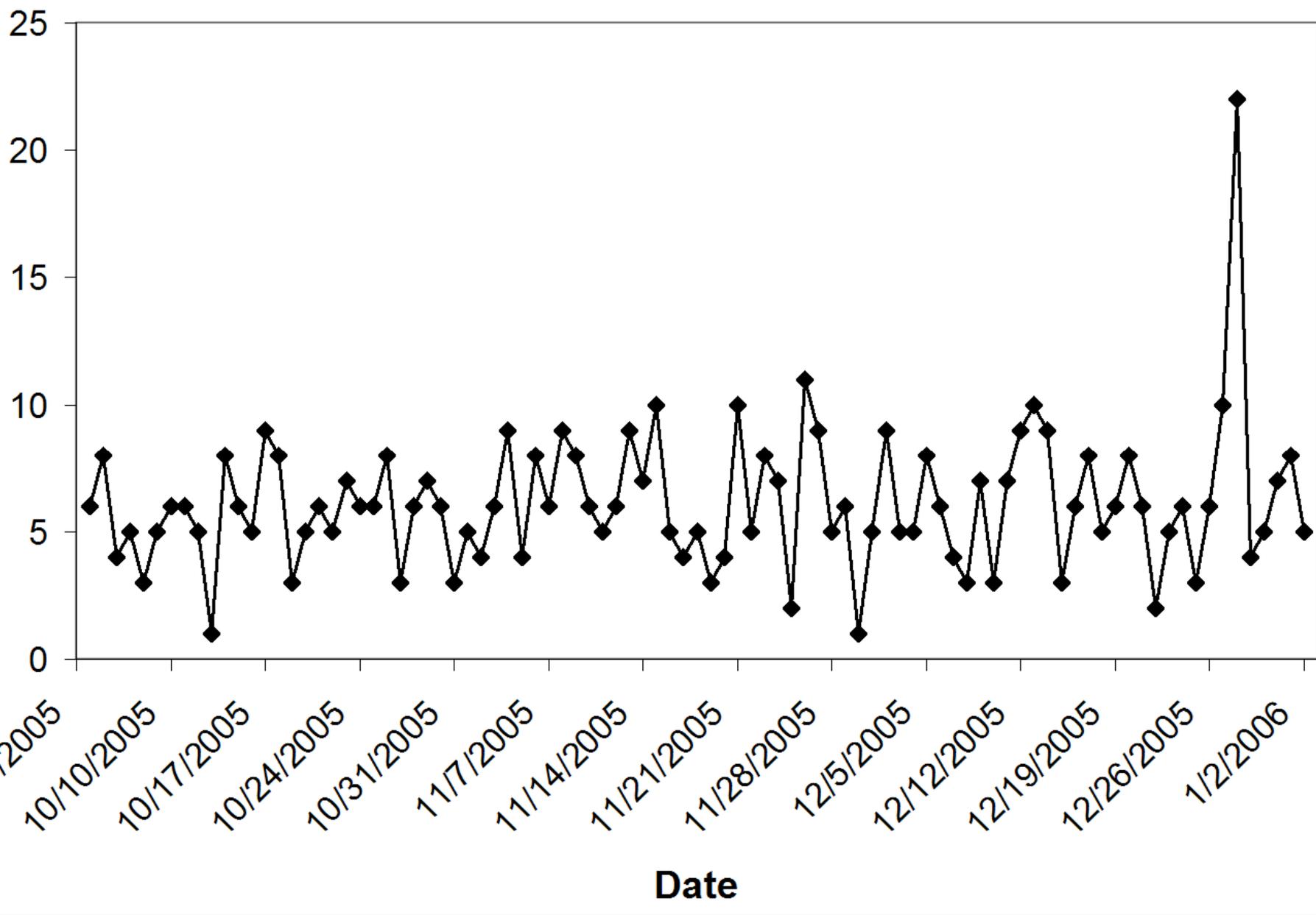
# Public Health Value: Data Reuse



ED Visit Count

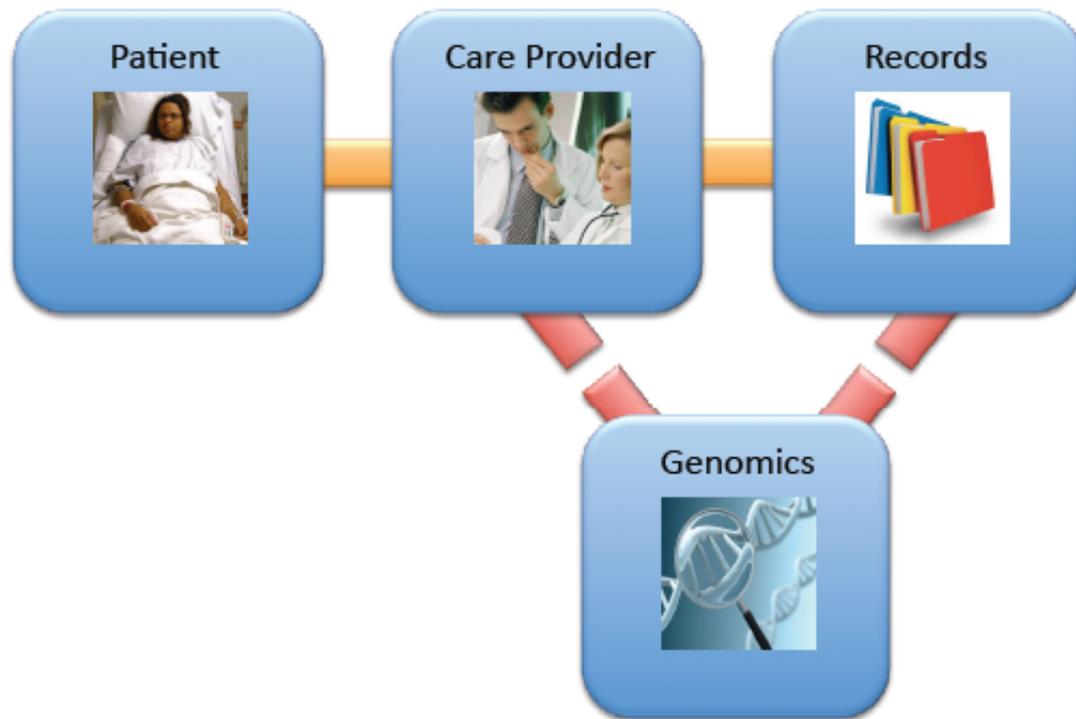


ED Visit Count



## Currently:

Physician sees patient, references own knowledge, recommends/implements care.  
Inadequate connections between individuals, care providers, and knowledge.

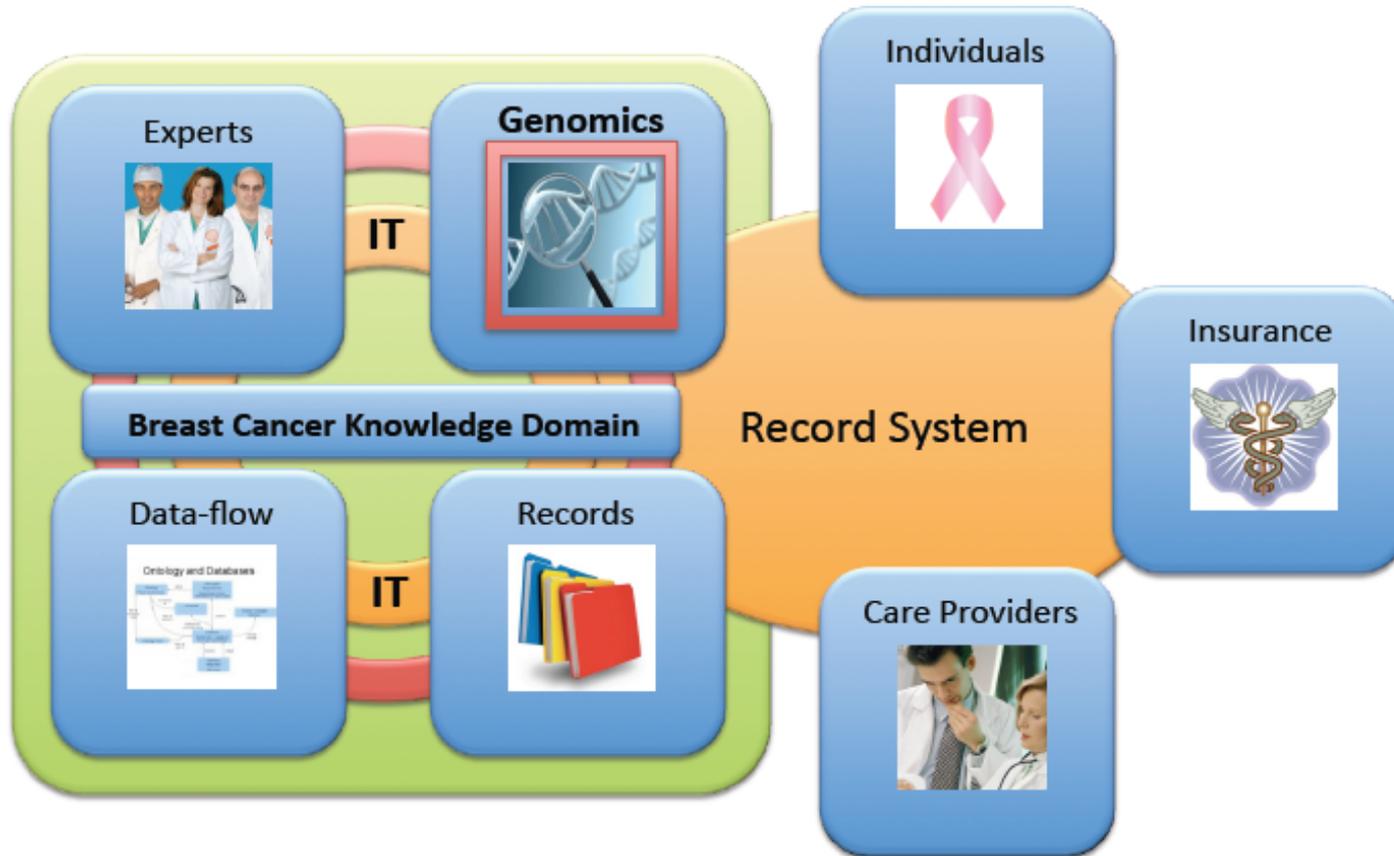


California's Council for Science and Technology (CCST) is collaborating with UC, CalPERS, and WellPoint on a breast cancer-personalized medicine project

CCST's pHIT project is building a breast cancer knowledge base operationalized via clinical decision support and HIT



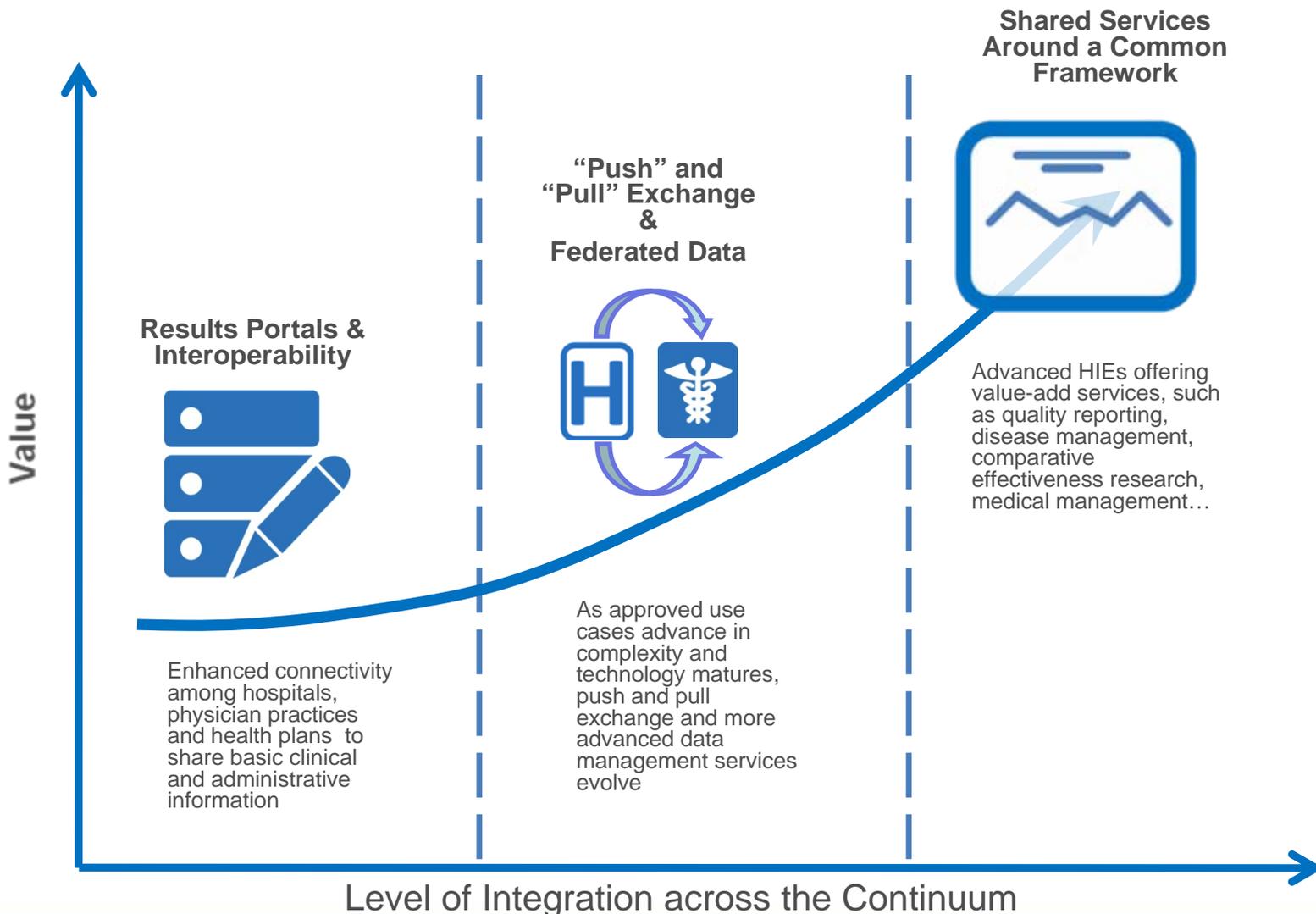
## New information-flow model



A new HIT enabled information flow model can take the latest advances in genomic based breast cancer research and deliver that knowledge to each individual patient-physician interaction.

The result is optimized care for all physician-patient interactions supported by the HIT network

# Progression of HIEs



## Conclusion

**Health care can be transformed through Health IT – but it must be the *right* HIT—connecting institutions together is not the answer; patient centric solutions are**

**For HIT to reach its potential, work processes will need to become more patient centric and less siloed**

**New opportunities to improve existing functions (real time disease surveillance...) or create new ones (accountable care organizations) will develop**

**California’s preparatory work for Health IT has been extensive and the thinking is advanced. Appropriate financing and solid execution are the next required steps.**