Health Informatics on FHIR

Course Overview

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Health Informatics on FHIR
This Course

Introductory

Non-technical

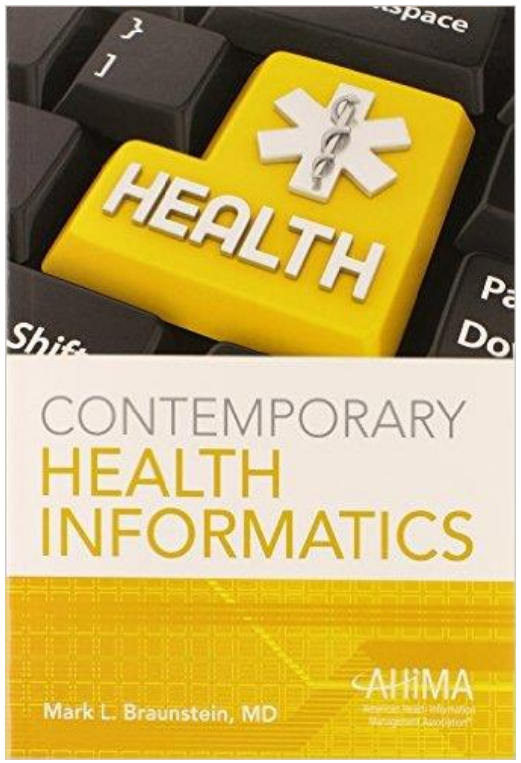
Multi-dimensional

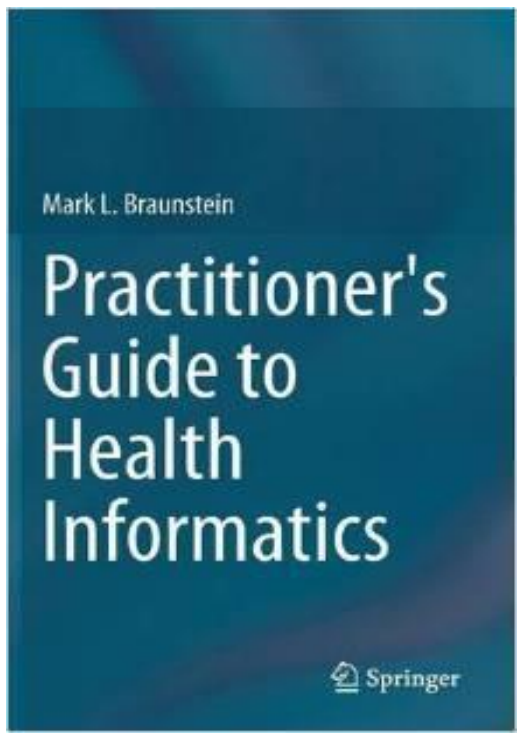
US specific

Rapidly growing/changing field

Focus on data to analytics, latest trends

Four modules, each in lessons


HEALTH
CONTEMPORARY
HEALTH
INFORMATICS
Mark L. Braunstein, MD
AHIMA


Mark L. Braunstein
Practitioner's
Guide to
Health
Informatics
Springer

“The forces that have led to a global epidemic of over testing, over diagnosis, and over treatment are easy to grasp. **Doctors get paid for doing more, not less.** We’re more afraid of doing too little than of doing too much. And patients often feel the same way. They’re likely to be grateful for the extra test done in the name of “being thorough”—and then for the procedure to address what’s found.”

http://www.newyorker.com/magazine/2015/05/11/overkill-atul-gawande

Health Informatics on FHIR

Introduction

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Health Informatics on FHIR

The Modules

1. Systematic Issues, Rationale for Informatics, Federal Programs
2. Data and Interoperability Standards
3. Real World Applications and Challenges
4. Big Data and Analytics

Health Informatics on FHIR

Course Objectives

1. Understand key system incentives, attributes, problems
2. Appreciate the potential roles of health informatics
3. Understand federal programs for adoption and better incentives
4. Be familiar with key health data and interoperability standards
5. Recognize key challenges in deploying informatics and the potential role of analytics-based tools in solving them
6. Have a clearer vision of how big data and analytics may transform healthcare

7. ***See how all of this interconnects***

Health Informatics on FHIR

Module 1 Overview

Mark L Braunstein, MD
School of Interactive Computing

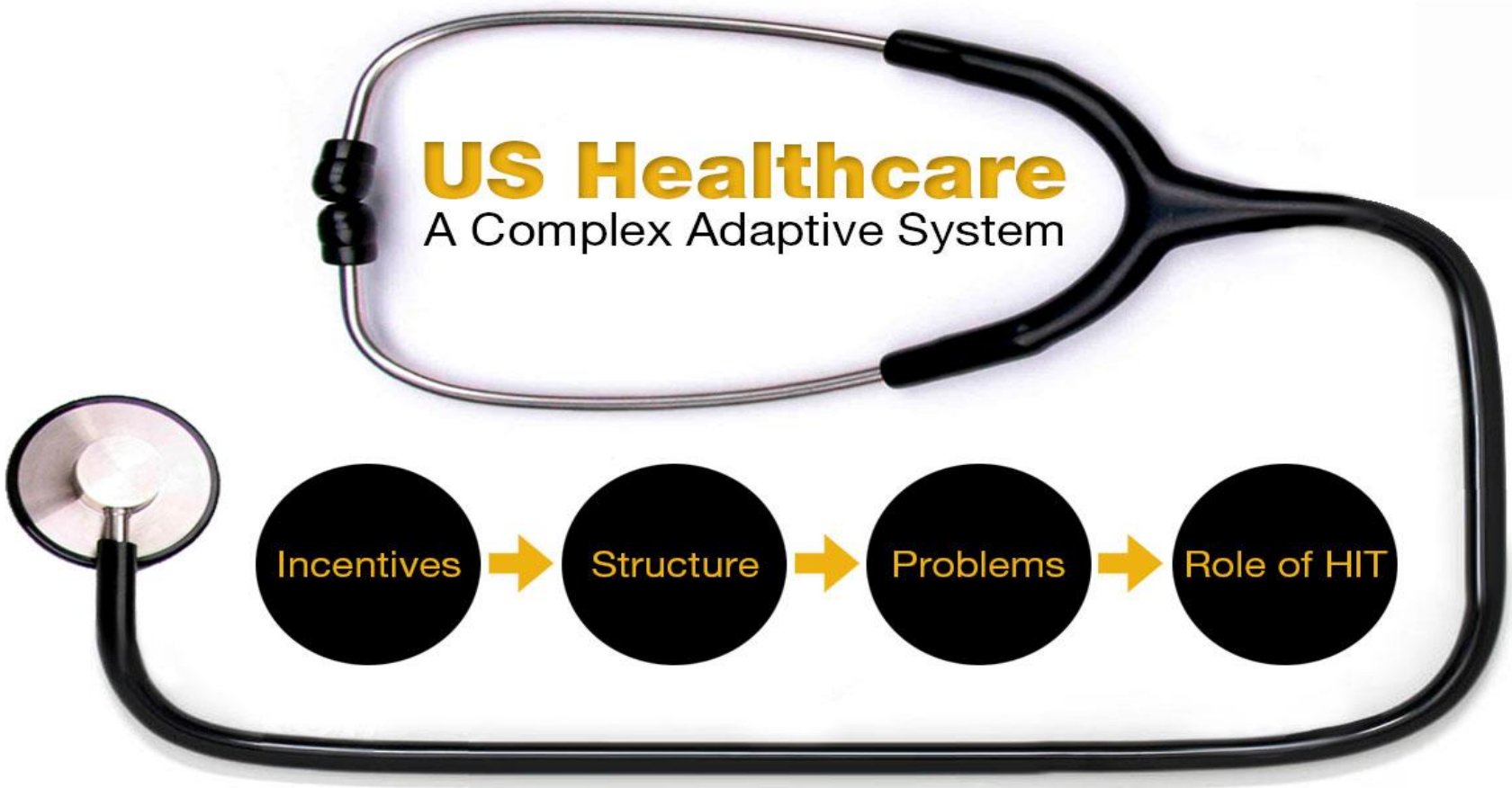
Georgia Institute of Technology

Health Informatics on FHIR

Module 1 Overview

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology


US Healthcare
A Complex Adaptive System
Incentives
Structure
Problems
Role of HIT

Module 1 Objectives

At the end of this module you will be able to:

- Identify some key attributes of the US Healthcare System
- Understand its unique economic incentives
- Explain some key problems and how they derive from those incentives
- See how health informatics can help solve these problems
- Have a basic understanding of the federal programs to foster adoption and change incentives to better align with the needs of US patients

Health Informatics on FHIR

Systematic Issues: Incentives

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Incentives

Lesson Objective

At the end of this lesson you will be able to

- Understand the impact that economic incentives have on the US healthcare system and workforce

Incentives

We Reward the Wrong Things

"The forces that have led to a global epidemic of over testing, over diagnosis, and over treatment are easy to grasp. **Doctors get paid for doing more, not less.** We're more afraid of doing too little than of doing too much. And patients often feel the same way. They're likely to be grateful for the extra test done in the name of "being thorough"—and then for the procedure to address what's found."

-- Atul Gawande, MD

http://www.newyorker.com/magazine/2015/05/11/overkill-atul-gawande

A Result

Over Emphasis on High Tech Care

A Result

Over Treatment

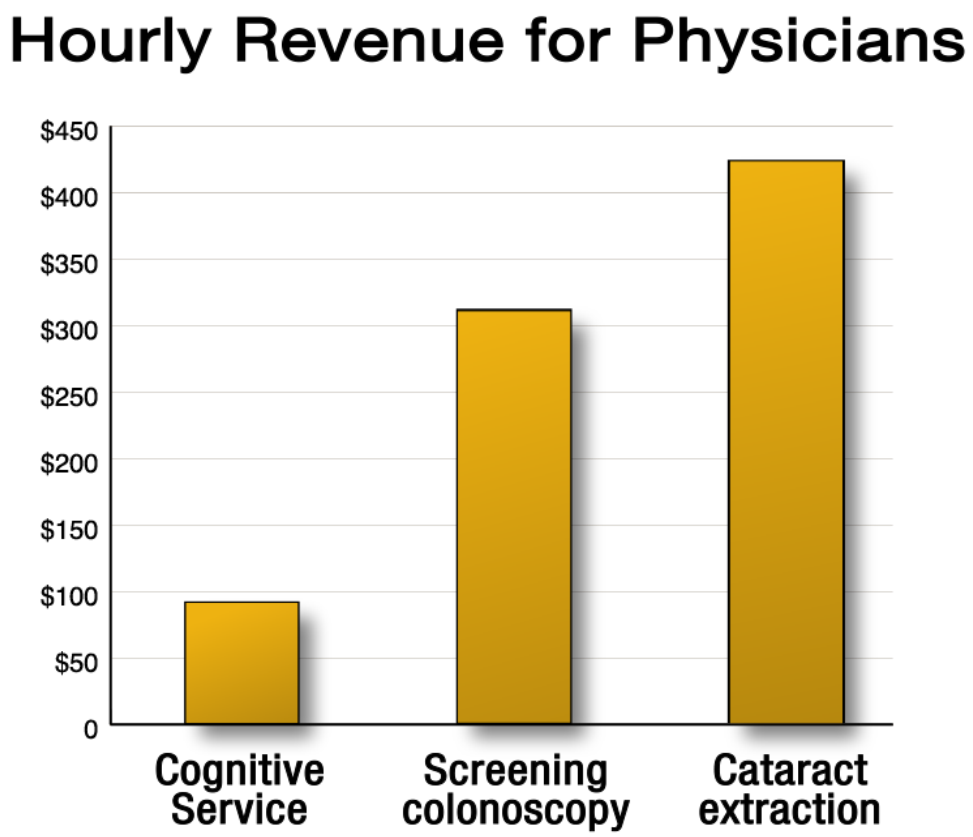
"The United States is a country of three hundred million people who annually undergo around fifteen million nuclear medicine scans, a hundred million CT and MRI scans, and almost ten billion laboratory tests."

-- Atul Gawande, MD

http://www.newyorker.com/magazine/2015/05/11/overkill-atul-gawande

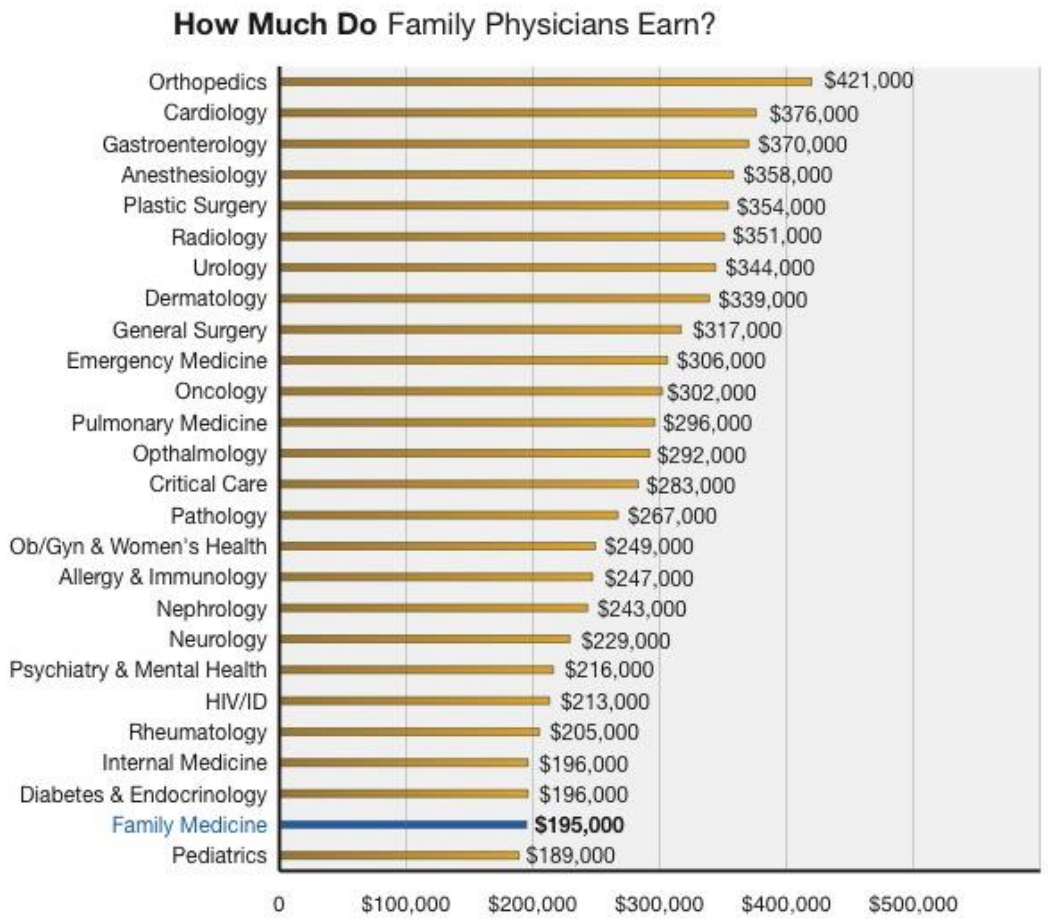
Skewed Rewards

Procedures vs Patient Interaction



Skewed Rewards

Primary Care Physicians versus Specialists



http://www.medscape.com/features/slideshow/compensation/2015/familymedicine

Skewed Rewards

Even in Training

http://www.medscape.com/features/slideshow/compensation/2015/familymedicine

Health Informatics on FHIR

Systematic Issues: Structure

Mark L Braunstein, MD

School of Interactive Computing

Georgia Institute of Technology

Health Informatics on FHIR

Systematic Issues: Structure

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Structure

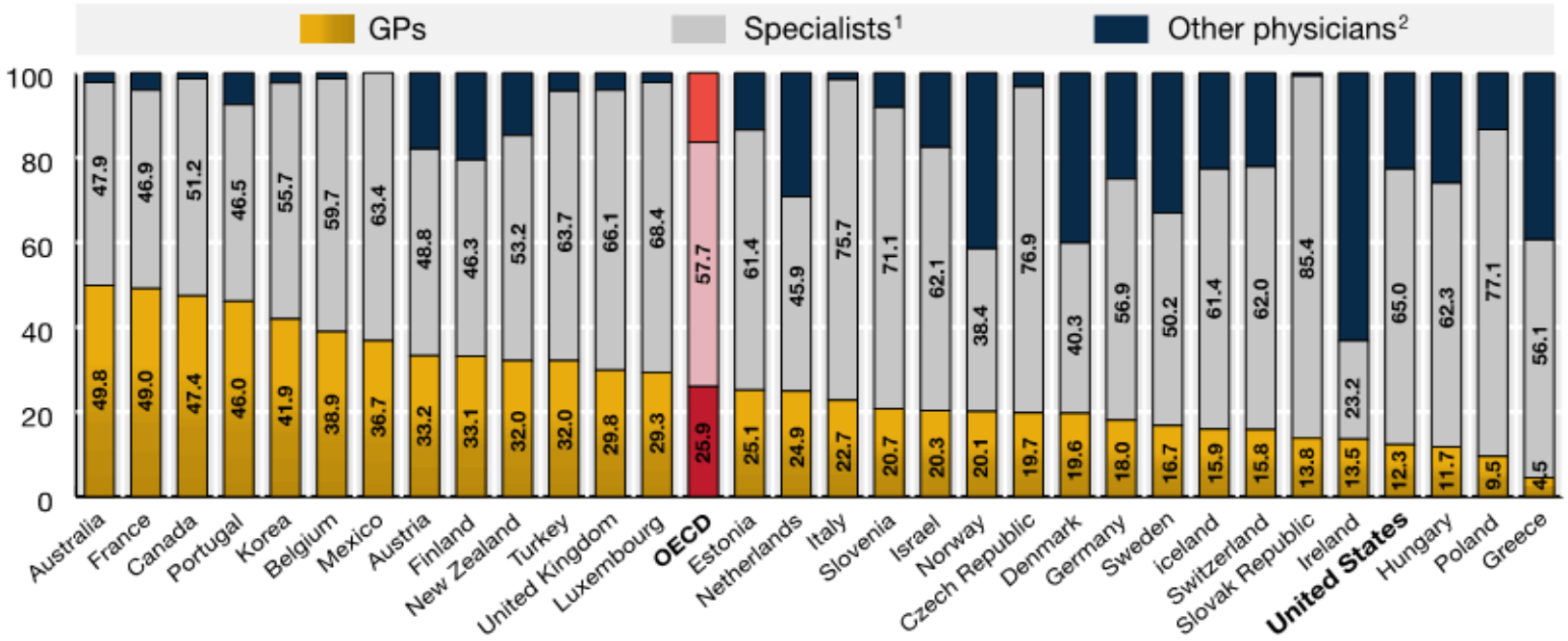
Lesson Objective

At the end of this lesson you will be able to

- Appreciate the structural difference between the current and desired US healthcare systems

US Healthcare

Specialist Dominated



OECD

US Healthcare

Provider – Centric

"Doctors generally know more about the value of a given medical treatment than patients, who have little ability to determine the quality of the advice they are getting. Doctors, therefore, are in a powerful position. **We can recommend care of little or no value because it enhances our incomes, because it's our habit, or because we genuinely but incorrectly believe in it, and patients will tend to follow our recommendations."**

-- Atul Gawande, MD

http://www.newyorker.com/magazine/2015/05/11/overkill-atul-gawande

US Healthcare

Fragmented, Uncoordinated

"US health care is a highly complex enterprise with a 'cottage-industry' structure (i.e., many small-scale, interdependent service providers that act independently, 'creating silos' of function and enterprise). **This siloed system is sorely mismatched to the nation's overriding health challenge, namely, providing coordinated, integrated, continuous care to more than 125 million Americans who suffer from chronic disease**."

Jerome H Grossman, MD, The Bridge, National Academy of Engineering, 2008

Desired Structure

Patient-Centric

“The **patient-centered medical home** is a way of organizing primary care that emphasizes care coordination and communication to transform primary care into "what patients want it to be." Medical homes can lead to higher quality and lower costs, and can improve patients’ and providers’ experience of care.”

http://www.ncqa.org/Programs/Recognition/Practices/PatientCenteredMedicalHomePCMH.aspx#sthash.Xz8pGkcE.dpuf

Patient Centered Medical Home

Health IT a Key

Health Informatics on FHIR

Systematic Issues: Problems

Mark L Braunstein, MD

School of Interactive Computing

Georgia Institute of Technology

Health Informatics on FHIR

Systematic Issues: Problems

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Problems

Lesson Objective

At the end of this lesson you will be able to

- Recognize some of the key problems that the structure and misalignment of incentives cause in US healthcare

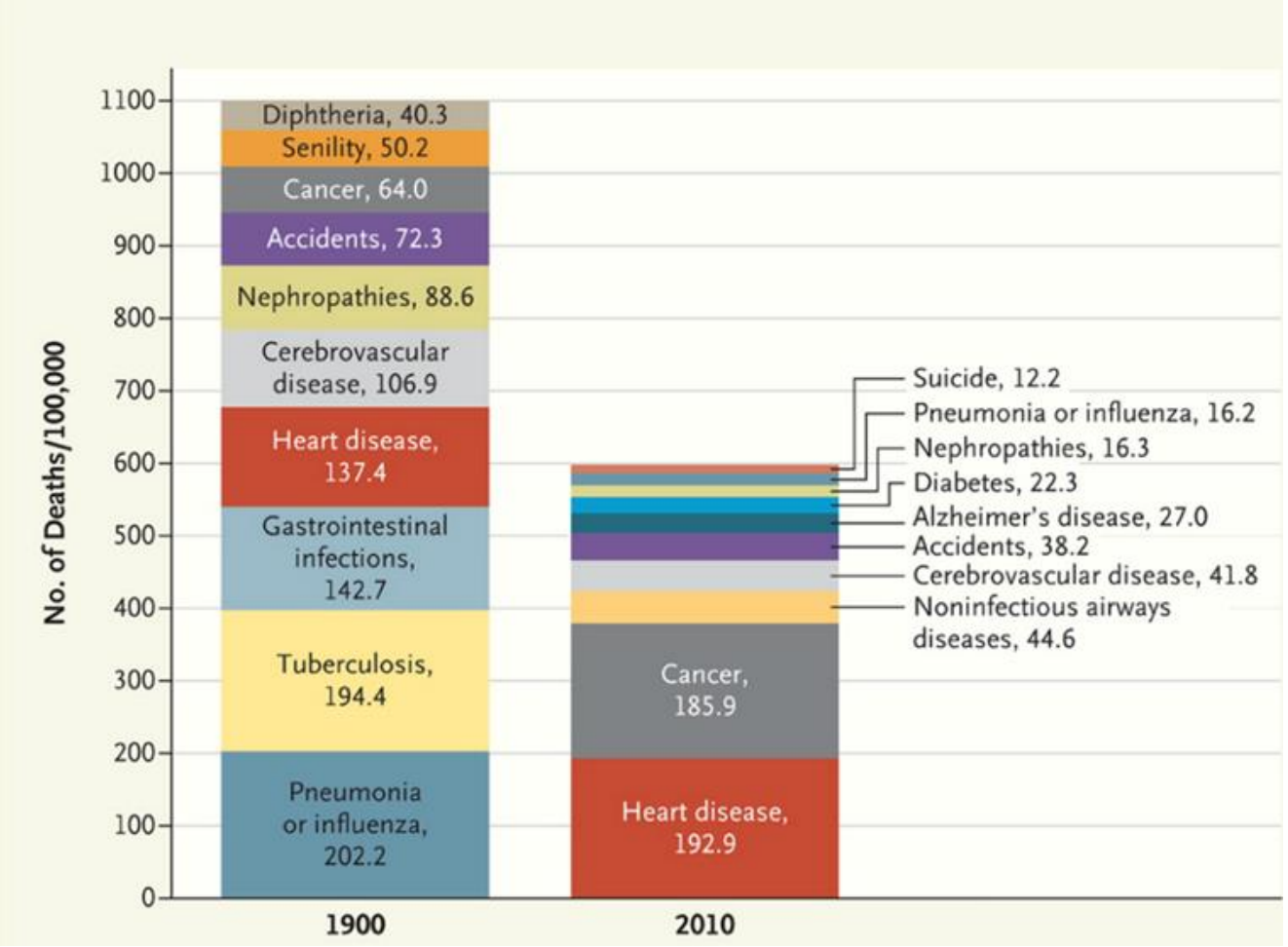
Problems

Chronic Disease Drives Rising Costs

"The single greatest cause of rising healthcare spending in the U.S. is **the growing prevalence of chronic disease**."

Kumar, S and Nigmatullin, A, Information Knowledge Systems Management 9 (2010) 127-152

Chronic Disease:
Why People Die (1900 vs. 2010)



http://www.nejm.org/doi/full/10.1056/NEJMp1113569

Spending
Chronic Disease

99%: beneficiaries with at least 1 chronic condition

96%: beneficiaries with multiple chronic condition

50%: beneficiaries with 5 or more multiple chronic diseases (20% of patients)

Partnership for Solutions. Chronic Conditions: Making the case for ongoing care. Baltimore, MD: Johns Hopkins University. 2002

Problems

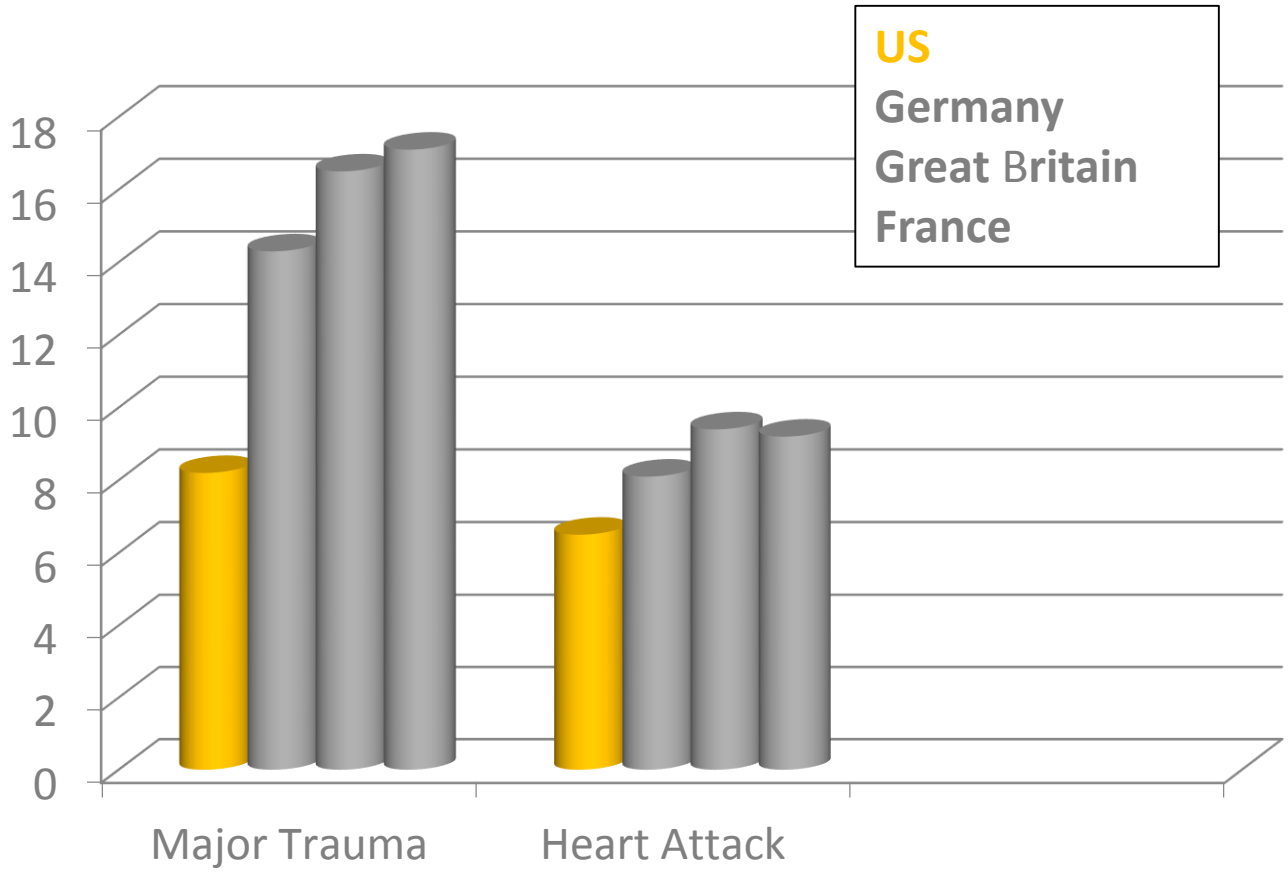
Low Quality

"US Health System Ranks Last Among Eleven Countries on Measures of Access, Equity, Quality, Efficiency, and Healthy Lives"

http://www.commonwealthfund.org/publications/press-releases/2014/jun/us-health-system-ranks-last

Quality

The Good News



Brent James, Intermountain Healthcare

Quality

The Bad News

"Vulnerable elders receive **about half of the recommended care**, and the **quality of care varies widely** from one condition and type of care to another."

http://www.rand.org/content/dam/rand/pubs/research_briefs/2005/RB9051.pdf

Quality

Even Worse News

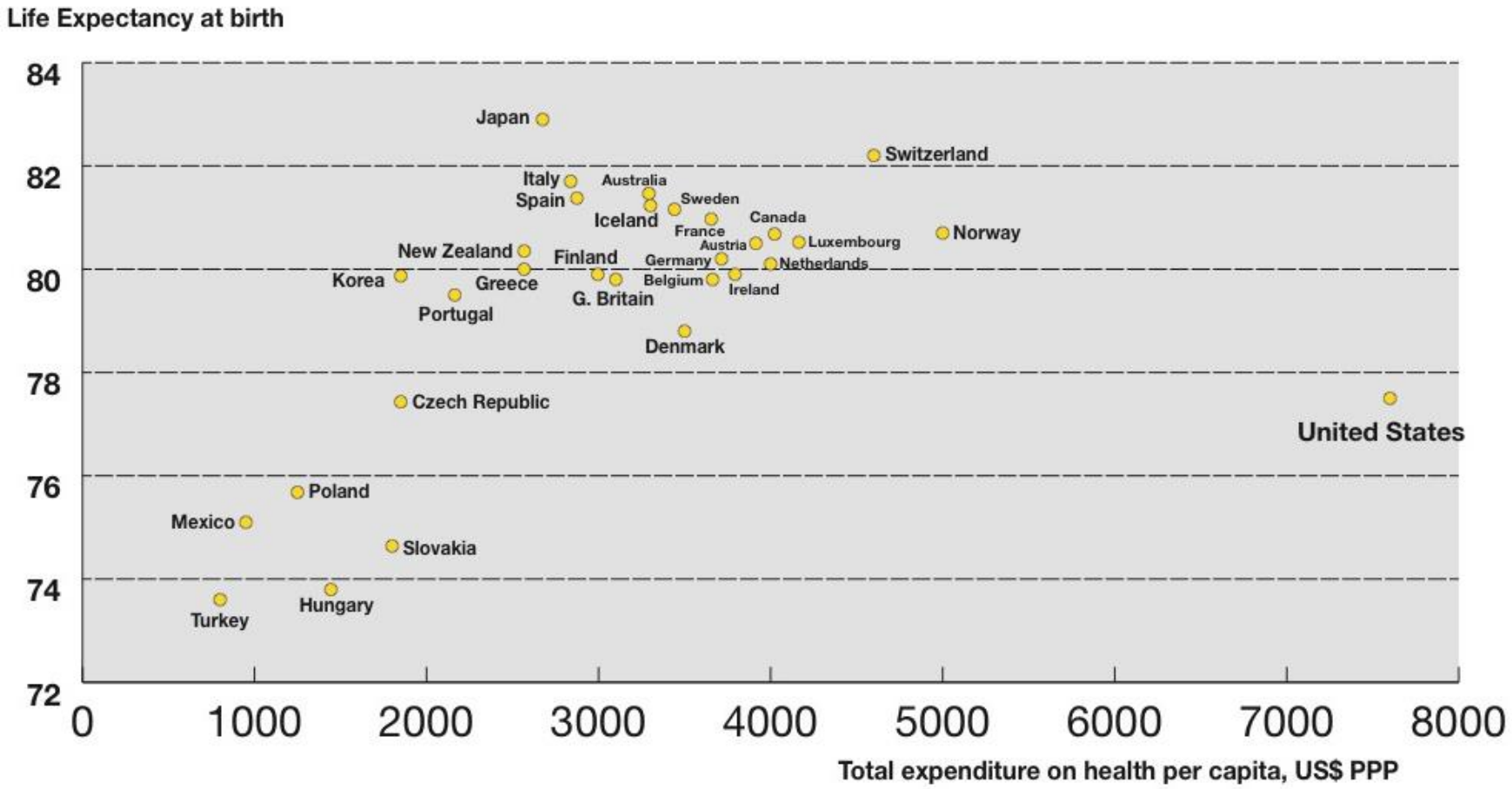
"210,000 preventable adverse events per year that contribute to the death of hospitalized patients"

"between 48,000 and 98,000 deaths annually are due to medical error"

http://www.rand.org/content/dam/rand/pubs/research_briefs/2005/RB9051.pdf
http://www.nap.edu/catalog/9728/to-err-is-human-building-a-safer-health-system

Sum of All Problems

Poor ROI



Health Informatics on FHIR

Rationale for Informatics

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Rationale for Informatics

Lesson Objectives

At the end of this lesson you will be able to

- Appreciate the potential of health informatics to help solve the US health system's unique problems
- Understand the informatics basis for a learning health system

The Institute of Medicine (IOM)

Mission

"The IOM's aim is to help those in government and the private sector make informed health decisions by providing evidence upon which they can rely."

http://iom.nationalacademies.org/About-IOM.aspx

The Institute of Medicine (2001)

Quality Chasm

"with regard to quality, 'between the health care we have and the care we could have lies not just a gap, but a chasm.' In fact, the chasm is not only over quality."

https://www.soa.org/library/monographs/health-benefits/chronic-care-monograph/2005/june/m-hb05-1_vi.aspx

The Institute of Medicine

Causes

"too few providers are adequately trained in chronic care and economic incentives are at odds with quality care."

https://www.soa.org/library/monographs/health-benefits/chronic-care-monograph/2005/june/m-hb05-1_vi.aspx

The Institute of Medicine

Structural Issues

"care is often fragmented and poorly coordinated, families' and patients' roles are too restricted"

https://www.soa.org/library/monographs/health-benefits/chronic-care-monograph/2005/june/m-hb05-1_vi.aspx

Network View of Primary Care

Anderson G and Horvath J 2004. The Growing Burden of Chronic Disease in America. Public Health Reports, May–June, 119:263-270.

Multiple Conditions

Poor Coordination

"Our Results confirm that patients with three or more chronic conditions have roughly **25-40 percent greater odds of reporting care coordination problems** than those who have a single condition (i.e., hypertension only)."

http://www.insigniahealth.com/wp-content/uploads/2012/11/Care-Coordination-Study.pdf

Poor Coordination

Leads to Errors

"U.S. patients who saw four or more doctors in the past two years were especially vulnerable, with about half reporting at least one of these errors; this points toward lapses in communication **during care transitions**."

http://content.healthaffairs.org/content/early/2005/11/28/hlthaff.w5.509.short

The Institute of Medicine

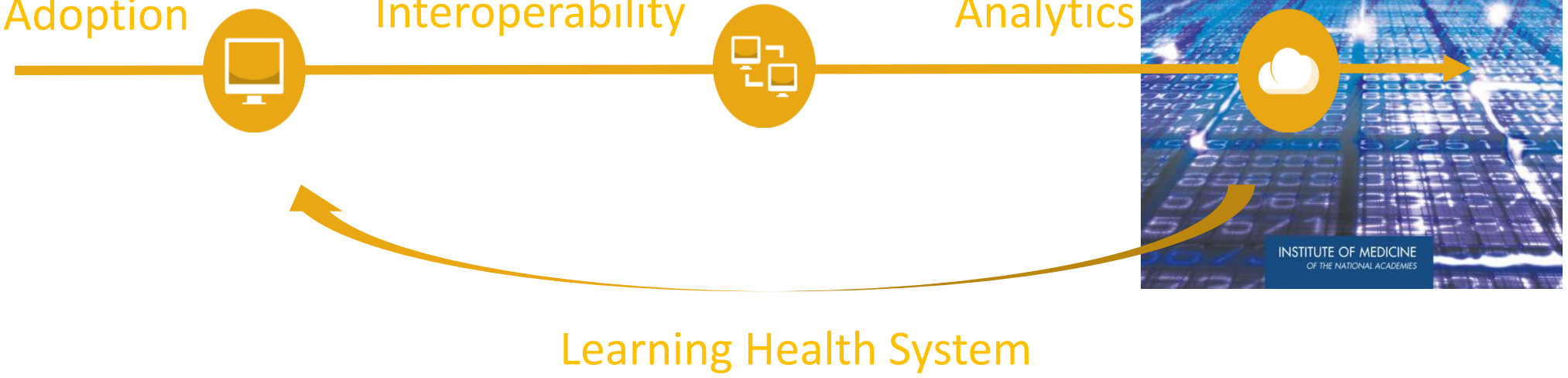
A Part of the Solution

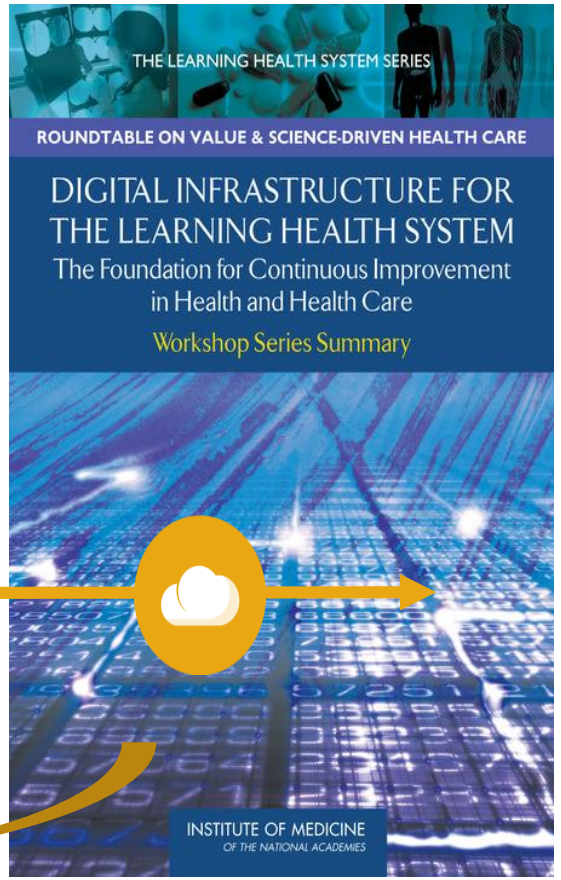
"information technology (IT) is not fully utilized"

https://www.soa.org/library/monographs/health-benefits/chronic-care-monograph/2005/june/m-hb05-1_vi.aspx

The Rationale for Health Informatics

Implementing IOM's Vision





http://www.iom.edu/Reports/2012/Best-Care-at-Lower-Cost-The-Path-to-Continuously-Learning-Health-Care-in-America.aspx

Health Informatics on FHIR

Module 2 Overview

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Health Informatics on FHIR

Federal Programs: Overview

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Federal Programs

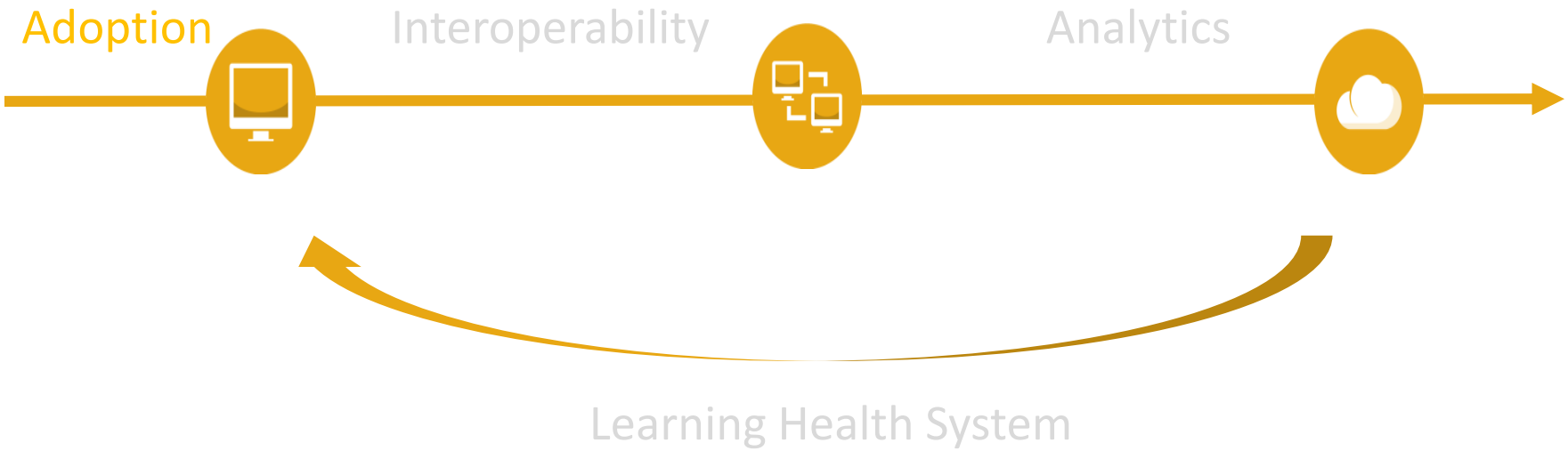
Module Objective

At the end of this module, you will be able to:

- Recognize and understand the basics of the federal programs to incent wider adoption and appropriate use of health informatics

Federal Programs

Implementing the IOM's Vision



http://www.iom.edu/Reports/2012/Best-Care-at-Lower-Cost-The-Path-to-Continuously-Learning-Health-Care-in-America.aspx

HIT Adoption Historically Low

- **1.5%** of U.S. [non-federal] hospitals (2009)
- **4%** of physicians (2008)

http://www.nejm.org/doi/full/10.1056/NEJMsa0802005 and http://www.nejm.org/doi/full/10.1056/NEJMsa0802005

Adoption (2004)

A 10 Year National Goal

"By computerizing health records, we can avoid dangerous medical mistakes, reduce costs and improve care."

The Office of the National Coordinator for Health Information Technology

Obama Administration Goals

- Universal HIT adoption by 2014 (Bush)
- New outcome/value-based incentives (Dartmouth)

American Recovery and Reinvestment Act (2009)

HITECH

HITECH Funding

- **$20.819 billion:** Medicare/Medicaid incentives
- **$2 billion:** Office of the National Coordinator

Office of the National Coordinator (ONC)

Key Programs

- EHR certification
- Meaningful Use
- Health information exchange
- Regional extension centers
- Standards and interoperability
- Research and demonstration projects

Karen DeSalvo, MD, Director

ONC

Demonstrations/Research

- **Beacon Communities:** Patient-centered care
- **SHARP:** Problems that impede the adoption of health IT → **SMART Platform**
- **HIE Challenge Grants:** Innovations in health data sharing

Programs to Spur Adoption

- EHR Certification
- Meaningful Use
- Incentive Payments (CMS Medicare/Medicaid)

Health Informatics on FHIR

Federal Programs: EHR Certification

Mark L Braunstein, MD
School of Interactive Computing
Georgia Institute of Technology

Health Informatics on FHIR

Federal Programs: EHR Certification

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

EHR Certification

Lesson Objective

At the end of this lesson, you will be able to:

- Understand the basic approach to defining the functional requirements for an EHR to qualify for the federal adoption program
- Appreciate that the requirements align with many of the problems we discussed earlier

EHR Certification

Chronic Care Management

- Record and chart vital signs
- Smoking Status
- Current problem list
- Active medication list
- Active medication allergy list
- Laboratory test results

- Drug formulary checks
- Generate patients lists

EHR Certification

Quality Improvement

- Electronic prescribing
- Drug-drug, drug-allergy interaction checks
- Medication reconciliation

- Computerized provider order entry
- Patient reminders
- Patient specific education resources
- Automated measure calculation

- Calculate and submit clinical quality

EHR Certification

Care Coordination

- Electronic copy of health information
- Timely access
- Clinical summaries
- Exchange information & patient summary record

EHR Certification

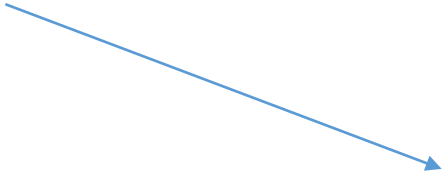
Public Health

- Submission to registries (cancer, reportable disease)
- Electronic surveillance (epidemics, bioterrorism)

EHR Certification

Test Data – ICD-9

- Cerebrovascular Accident, ICD-9 Code: v12.54
- Recurrent Urinary Tract Infection, ICD-9 Code: V13.02
- Chronic Obstructive Pulmonary Disease, ICD-9 Code: 496.0
- Essential Hypertension, ICE-9 Code: 401.9



Status: Vendor-supplied (e.g. Active)
Date Diagnosed: Vendor-supplied (e.g. May 22, 2010)

EHR Certification

Test Data – SNOMED CT

- Cerebrovascular Accident, SNOMED CT Code: 230690007
- Recurrent Urinary Tract Infection, SNOMED CT Code: 197927001
- Chronic Obstructive Lung Disease, SNOMED CT Code: 13645005
- Essential Hypertension, SNOMED CT Code: 59621000

Status: Vendor-supplied (e.g. Active)
Date Diagnosed: Vendor-supplied (e.g. May 22, 2010)

EHR Certification

Testing Procedure

- TE170.302.c – 3.01: Using the EHR function(s) identified by the Vendor, the Tester shall **select the patient's existing record and shall display the patient problems**

- TE170.302.c – 3.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and shall **display the patient problem history**

- TE170.302.c – 3.03: Using the NIST-supplied Inspection Test Guide, the tester shall **verify that the patient problem list test data and the patient problem history display correctly and without omission**

- **Modify the Status of Urinary Tract Infection** from vendor-supplied (e.g. Active) to vendor-supplied (e.g. Resolved), Date Modified: vendor-supplied (e.g. August 29, 2010)

EHR Certification

Quality Reporting

PASSING MEASURES

MEASURES INCLUDED IN THIS TEST	PATIENTS	DENOMINATOR	DEN. EXCLUSIONS	NUMERATOR	NUM. EXCLUSIONS	EXCEPTIONS
0064 - Diabetes: Low Density Lipoprotein (LDL) Management	2/2.0	2 / 2.0	0 / 0.0	1 / 1.0	- /	- /
0056 - Diabetes: Foot Exam	2/2.0	2 / 2.0	0 / 0.0	1 / 1.0	- /	- /

FAILING MEASURES

MEASURES INCLUDED IN THIS TEST	PATIENTS	DENOMINATOR	DEN. EXCLUSIONS	NUMERATOR	NUM. EXCLUSIONS	EXCEPTIONS
0022 - Use of High-Risk Medications in the Elderly - 1+ High-Risk Medications	4/2.0	44 / 2.0	- /	1 / 1.0	- /	- /
0022 - Use of High-Risk Medications in the Elderly - 2+ High-Risk Medications	4/2.0	44 / 2.0	- /	0 / 0.0	- /	- /
0385 - Colon Cancer: Chemotherapy for AJCC Stage III Colon Cancer Patients	/2.0	- / 2.0	- /	- / 1.0	- /	- /

Vendor Generated XML

```
<?xml version="" encoding="" ?>
  <?xml-stylesheet type="text/xsl" href="qrda.xsl"?>
    <ClinicalDocument schemaLocation="urn:hl7-org:v3 ../../CDASchema/CDA.xsd">
      <!-- ********************************************************** CDA Header
      ********************************************************** -->
      <realmCode code="US"/>
      <typeId root="2.16.840.1.113883.1.3" extension="POCD_HD000040"/>
      <!-- QRDA Category III Release 1 template ID (this template ID differs from QRDA III comment only template
      ID). -->
```

EHR Certification

How Many Certified EHRs

- Professionals' Office (?)
- Hospital (?)

http://dashboard.healthit.gov/

EHR Certification

Hundreds!

- Professionals' Office (**760**)
- Hospital (**179**)

What problem does this exacerbate?

Health Informatics on FHIR

Federal Programs: Meaningful Use

Mark L Braunstein, MD
School of Interactive Computing
Georgia Institute of Technology

Health Informatics on FHIR

Federal Programs: Meaningful Use

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Meaningful Use

Lesson Objective

At the end of this lesson, you will be able to:

- Understand how providers must use their certified EHR to quality for incentive payments
- Appreciate that the requirements align with many of the problems we discussed earlier

Meaningful Use

Eligible Hospitals

- "Subsection (d) hospitals" in the 50 states or DC that are paid under the Inpatient Prospective Payment System (IPPS)
- Critical Access Hospitals (CAHs)
- Medicare Advantage (MA-Affiliated) Hospitals
- Acute care hospitals (including CAHs and cancer hospitals) with at least 10% Medicaid patient volume
- Children's hospitals (no Medicaid patient volume requirements)

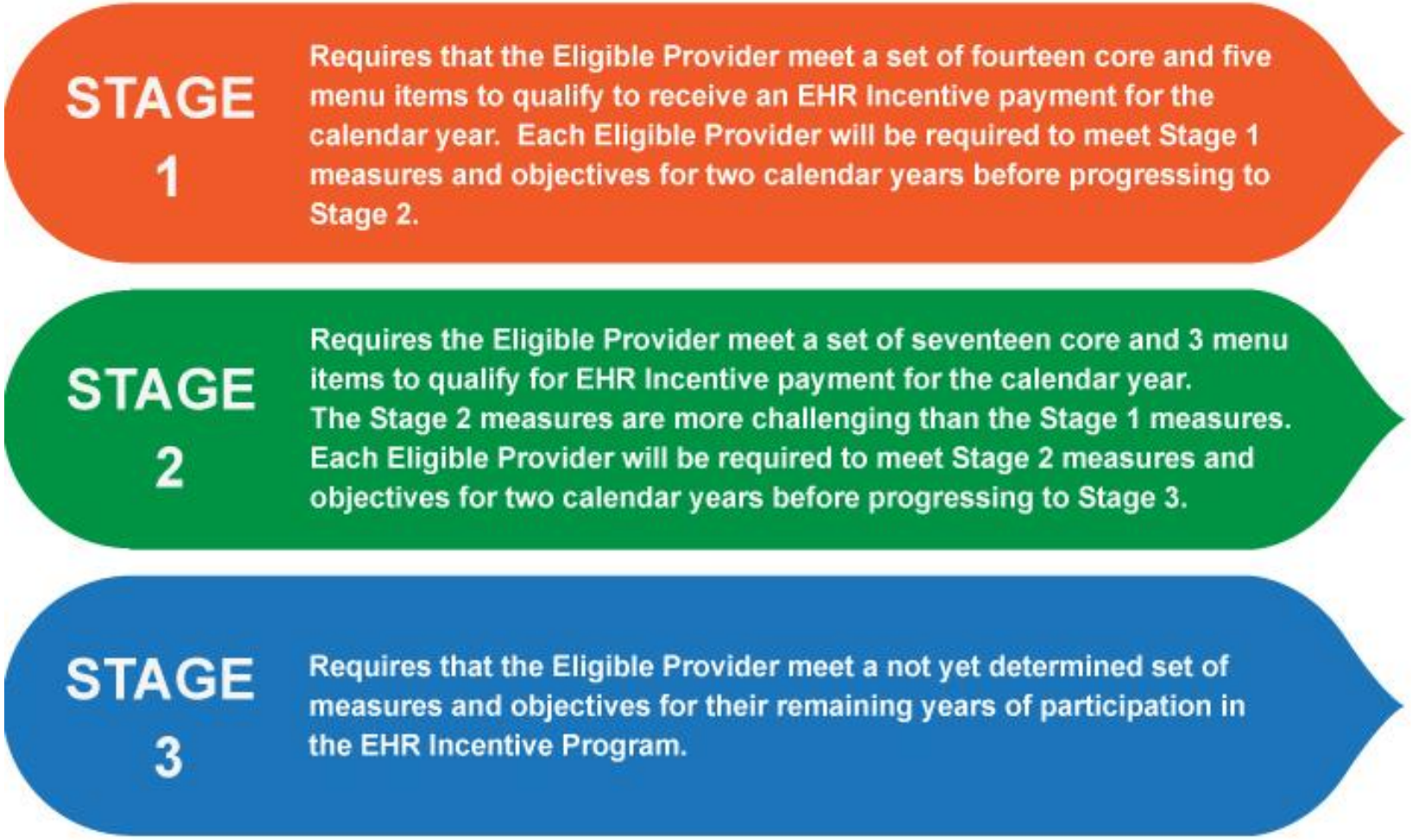
Meaningful Use

Eligible Providers

- Physicians
- Nurse Practitioners
- Certified Nurse - Midwife
- Dentists
- Physicians Assistants who practice in a Federally Qualified Health Center (FQHC) or Rural Health Center (RHC) that is led by a Physician Assistant
- Doctors of Optometry

Meaningful Use

Progressive Stages



ONC 2015 Edition

Health IT Certification Criteria

- Improve Interoperability
- Facilitate Data Access and Exchange
- Ensure Privacy and Security Capabilities
- Improve Patient Safety
- Reduce Health Disparities
- Improve the Reliability and Transparency of Certified Health IT
- Use the ONC Health IT Certification Program to Support the Care Continuum
- Support Stage 3 of the EHR Incentive Programs

Meaningful Use Stage 3

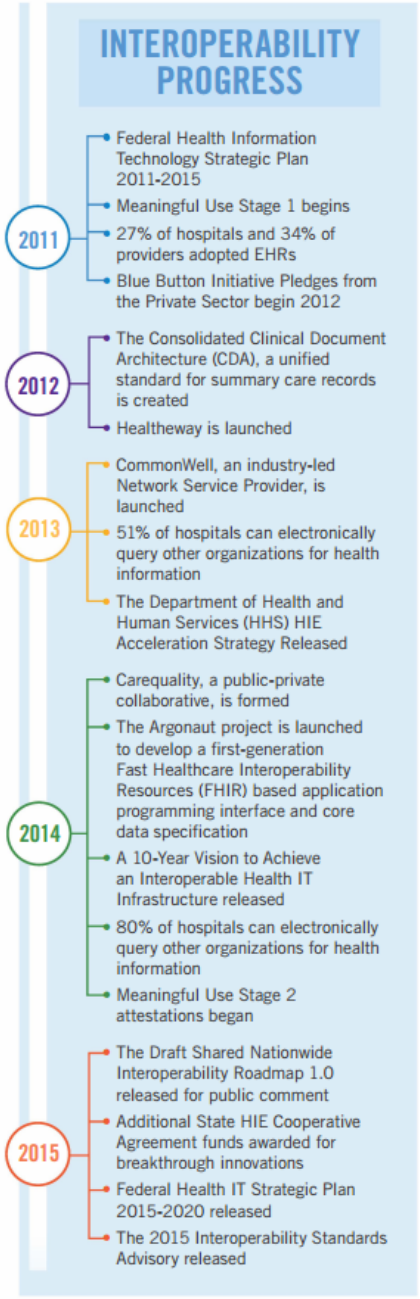
Introduces API-based Exchange

"We also proposed to expand the technology functions that may be used for transmission including a wider range of options, such as application-program interface (API) functionality. "

http://www.gpo.gov/fdsys/pkg/FR-2015-10-16/pdf/2015-25595.pdf

ONC Interoperability Roadmap

FHIR Mentioned 9 Times



https://www.healthit.gov/sites/default/files/hie-interoperability/nationwide-interoperability-roadmap-final-version-1.0.pdf

Healthcare Quality

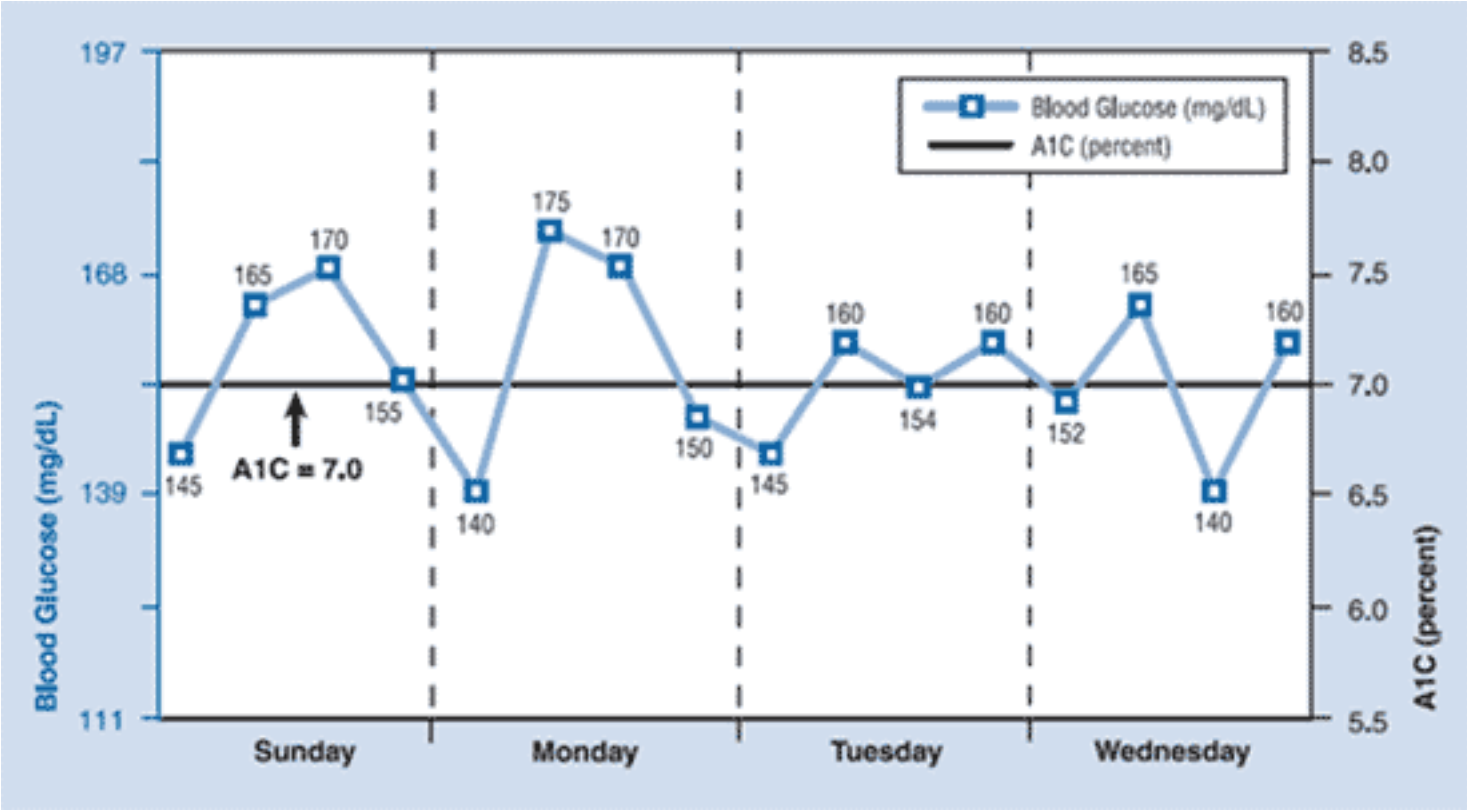
Defined (IOM)

"The degree to which health services for individuals and populations **increase the likelihood of desired health outcomes** and are **consistent with current professional knowledge**..."

http://www.iom.edu/Global/News%20Announcements/Crossing-the-Quality-Chasm-The-IOM-Health-Care-Quality-Initiative.aspx

Quality Metric Exemplar

HbA1c



CDC

Quality Measures

Two Types

Process: Annual HbA1c testing?

% of diabetics having the test

Outcome: Adequate control?

% of diabetics above a threshold

MU % 18 - 75 year old diabetics HbA1c > 9.0% (uncontrolled)

Select Provider Requirements

Stage 2 (modified) / Stage 3

e-Prescribing: More than 50 percent (60 percent in Stage 3) of permissible prescriptions written by an eligible provider are queried for a drug formulary and transmitted electronically

Clinical Decision Support: Implement five clinical decision support interventions related to four or more clinical quality measures at a relevant point in patient care and implement and enable drug-drug and drug allergy interaction checks for the entire EHR reporting period.

Computer-based Physician Order Entry (CPOE): At least 60% of medication orders, more than 30% (60% in Stage 3) of lab orders and diagnostic imaging orders. (Order entry by “scribes” counts toward these goals.)

http://www.cdc.gov/ehrmeaningfuluse/docs/cms_stage_3_mu_overview_2015_2017.pdf

Patient Engagement

Modified Stage 2 (2015-2016)

Measure 1: More than 50 percent of all unique patients seen by the EP during the EHR reporting period are provided timely access to view online, download, and transmit to a third party their health information subject to the EP's discretion to withhold certain information.

Measure 2: At least one patient seen by the EP during the EHR reporting period (or patient-authorized representative) views, downloads or transmits to a third party his or her health information during the EHR reporting period.

http://www.cdc.gov/ehrmeaningfuluse/docs/cms_stage_3_mu_overview_2015_2017.pdf

Patient Engagement

Stage 3 (2017)

Measure 1: More than 5% of all unique patients seen actively engage with the EHR by either- (1) view, download or transmit to a third party their health information; or (2) access their health information through **the use of an API** that can be used by applications chosen by the patient and configured to the API in the provider's EHR; or (3) a combination of (1) and (2).

Measure 2: More than 5% of all unique patients seen were sent a secure message was sent to the patient or in response to a secure message sent by the patient.

Measure 3: Patient-generated health data or data from a nonclinical setting is incorporated into the EHR for more than 5 of all unique patients seen.

http://hitconsultant.net/wp-content/uploads/2015/10/MU-Final-Rule-2015-25595.pdf

Health Information Exchange

Stage 3

Measure 1: For more than 50% of transitions of care and referrals, the EP that transitions or refers their patient to another setting of care or provider of care-- (1) creates a summary of care record; and (2) electronically exchanges the summary of care record.

Measure 2: For more than 40% of transitions or referrals received and patient encounters in which the EP has never before encountered the patient, the EP receives or retrieves and incorporates into the patient's record an electronic summary of care document.

Measure 3: For more than 80% of transitions or referrals received and patient encounters in which the EP has never before encountered the patient, the EP performs clinical information reconciliation.

Health Informatics on FHIR

Federal Programs: Incentive Payments

Mark L Braunstein, MD
School of Interactive Computing
Georgia Institute of Technology

Health Informatics on FHIR

Federal Programs: Incentive Payments

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Incentive Payments

Lesson Objective

At the end of this lesson, you will be able to:

- Understand how providers are reimbursed if they achieve Meaningful Use

Incentive Payments

Two Programs

Medicare (no threshold)

- Amount is based on quantity of Medicare
- Carrot and Stick

Medicaid (30% of patients, 20% for pediatricians)

- Carrot Only

Providers can participate in only one

Incentive Payments

Medicare Program

	Adopt in 2011	Adopt in 2012	Adopt in 2013	Adopt in 2014	Adopt in 2015	Adopt After 2015
2011	$18,000	$0	$0	$0	$0	Penalties Begin
2012	$12,000	$18,000	$0	$0	$0	
2013	$8,000	$12,000	$15,000	$0	$0	
2014	$4,000	$8,000	$12,000	$15,000	$0	
2015	$2,000	$4,000	$8,000	$12,000	$0	
2016	$0	$2,000	$4,000	$8,000	$0	
Total	$44,000	$44,000	$39,000	$35,000	$0	

Maximum Reimbursement | 11% Reduction | 20% Reduction | 100% Reduction

http://www.edgemed.com/stimulus/

Incentive Payments

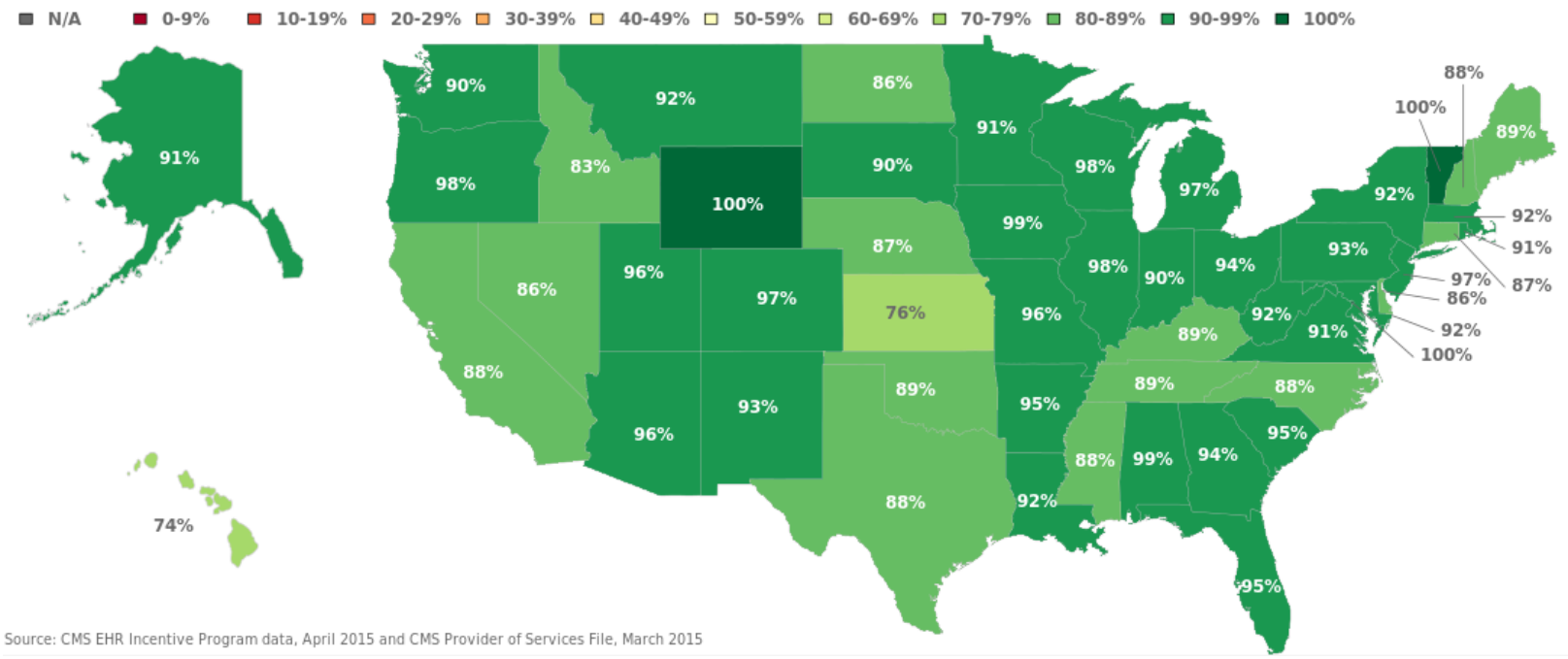
Results to Date

- Eligible Providers Medicare MU: (?)
- Eligible Hospitals MU: (?)

http://dashboard.healthit.gov/

Results

Eligible Hospitals

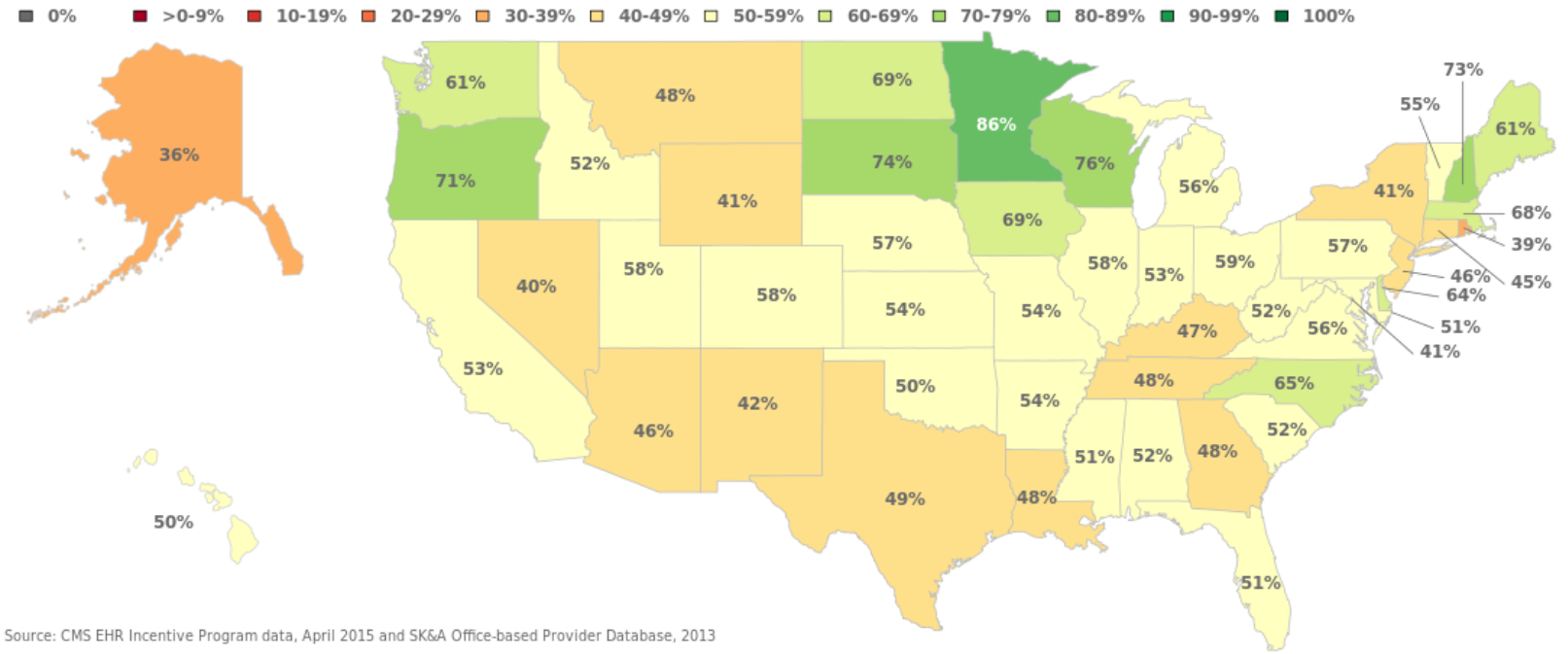


95% of eligible hospitals have demonstrated Meaningful Use of Certified Health IT

http://dashboard.healthit.gov/

Results

Eligible Providers



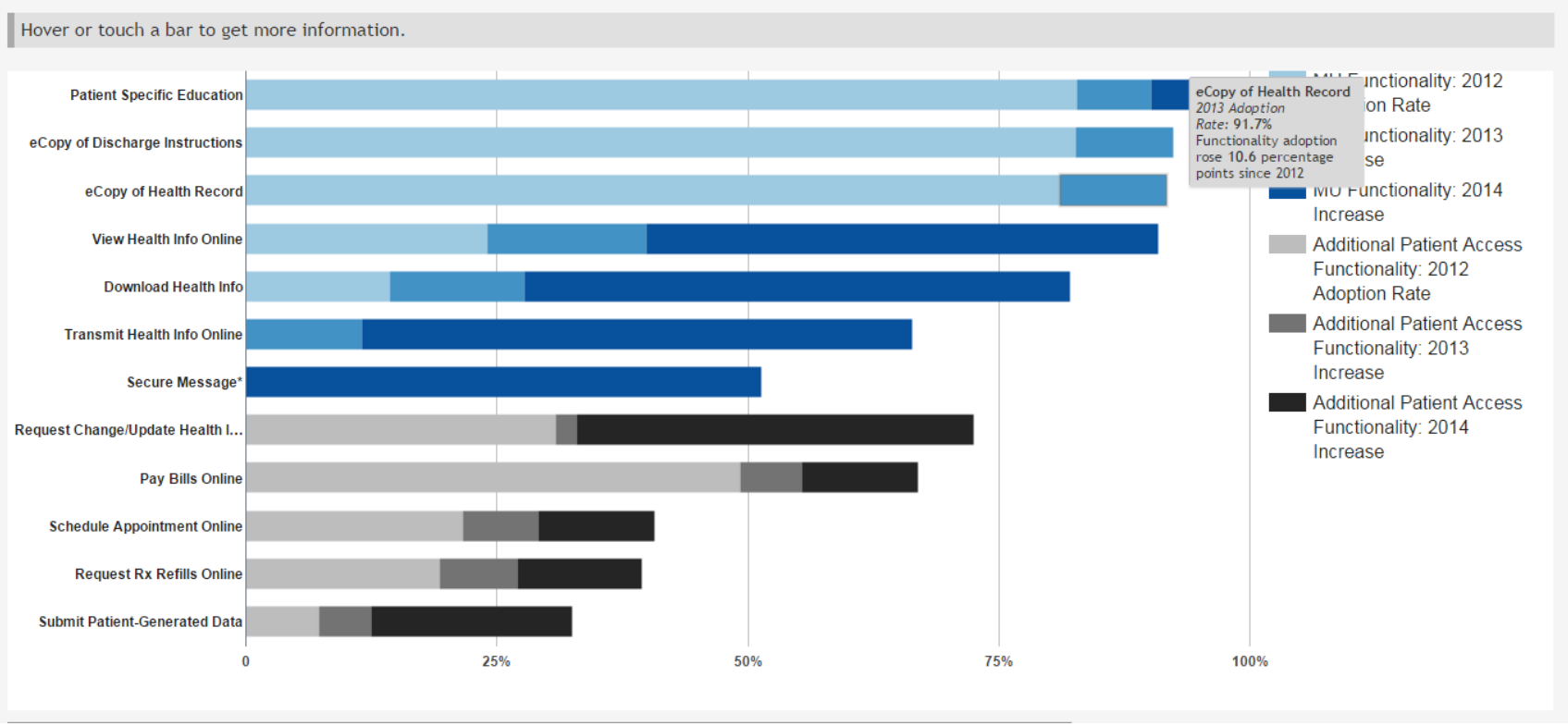
Source: CMS EHR Incentive Program data, April 2015 and SK&A Office-based Provider Database, 2013

54% of office-based physicians have demonstrated Meaningful Use of Certified Health IT

http://dashboard.healthit.gov/

Results

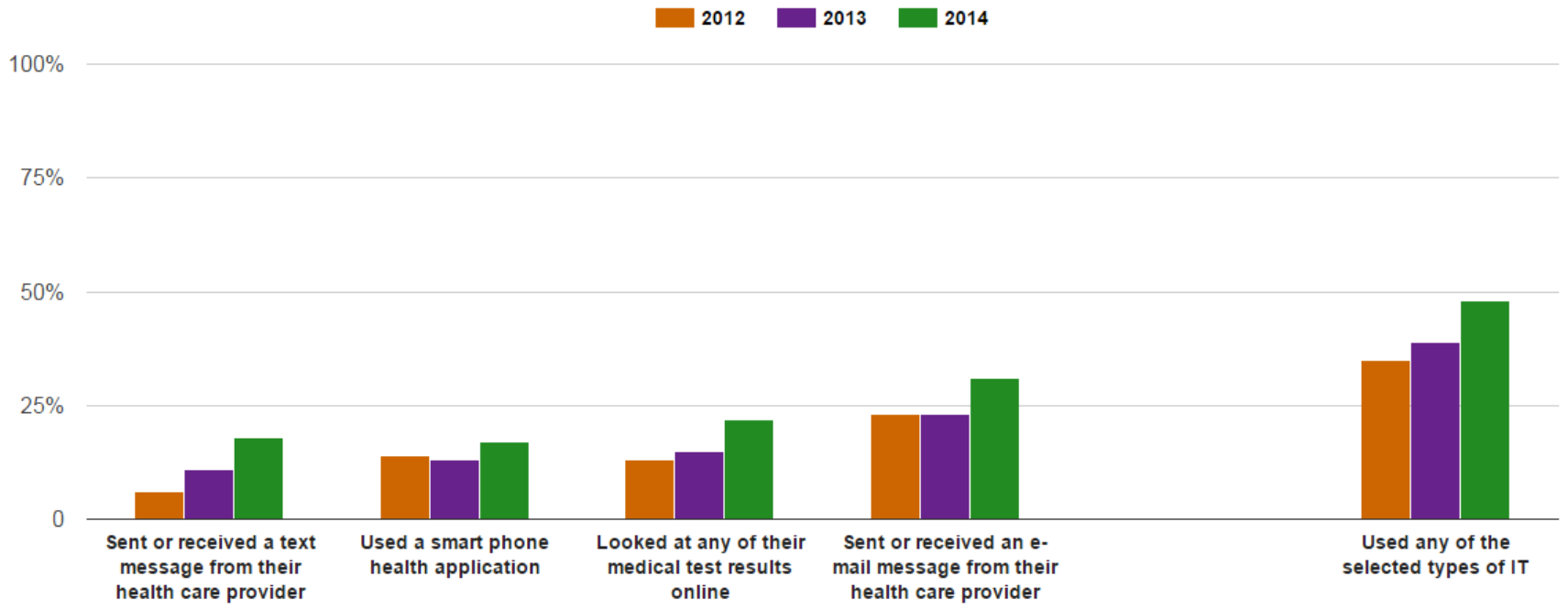
Hospital Patient Engagement



http://dashboard.healthit.gov/

Results

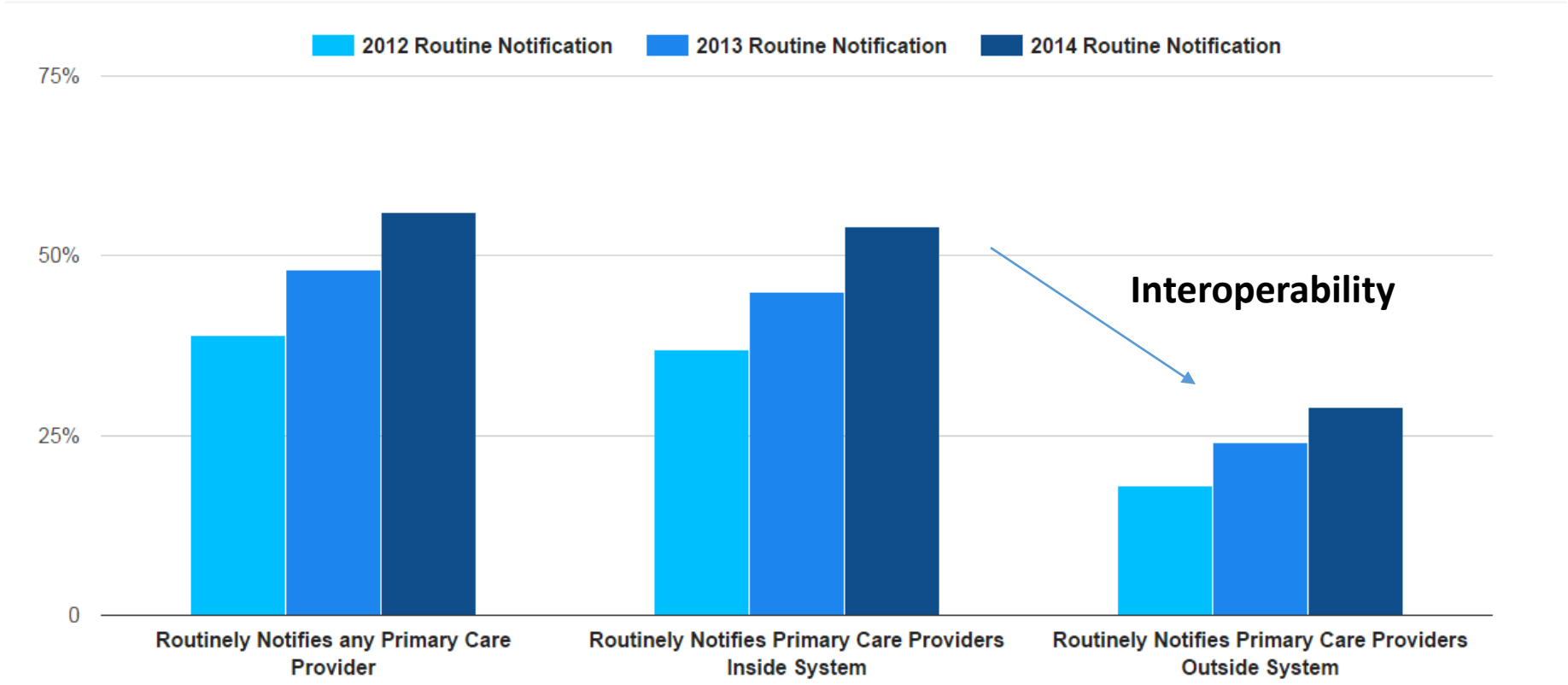
Patient Engagement



http://dashboard.healthit.gov/

Results

Continuity of Care



http://dashboard.healthit.gov/

Health Informatics on FHIR

Federal Programs: Incentive Reform

Mark L Braunstein, MD
School of Interactive Computing
Georgia Institute of Technology

Health Informatics on FHIR

Federal Programs: Incentive Reform

Mark L Braunstein, MD
School of Interactive Computing

Georgia Institute of Technology

Incentive Reform

Lesson Objective

At the end of this lesson, you will be able to:

- Understand the basic concept of value-based reimbursement as a replacement for paying for procedures

Incentives

We Reward the Wrong Things

The forces that have led to a global epidemic of over testing, over diagnosis, and over treatment are easy to grasp. **Doctors get paid for doing more, not less.** We're more afraid of doing too little than of doing too much. And patients often feel the same way. They're likely to be grateful for the extra test done in the name of "being thorough"—and then for the procedure to address what's found.

-- Atul Gawande, MD

http://www.newyorker.com/magazine/2015/05/11/overkill-atul-gawande

Affordable Care Act (2010)

Value-based Care

The **Medicare Shared Savings Program** will allow providers who voluntarily agree to work together to coordinate care for patients and who meet certain quality standards to share in any savings they achieve for the Medicare program.

http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/downloads/ACO-Menu-Of-Options.pdf

Proof of Concept

PGP Demo

- 10 Advanced Sites
- 4 earned $29.4 million
- Marshfield Clinic earned half

  “health information technology (point-of-care reminders, being completely chartless)”

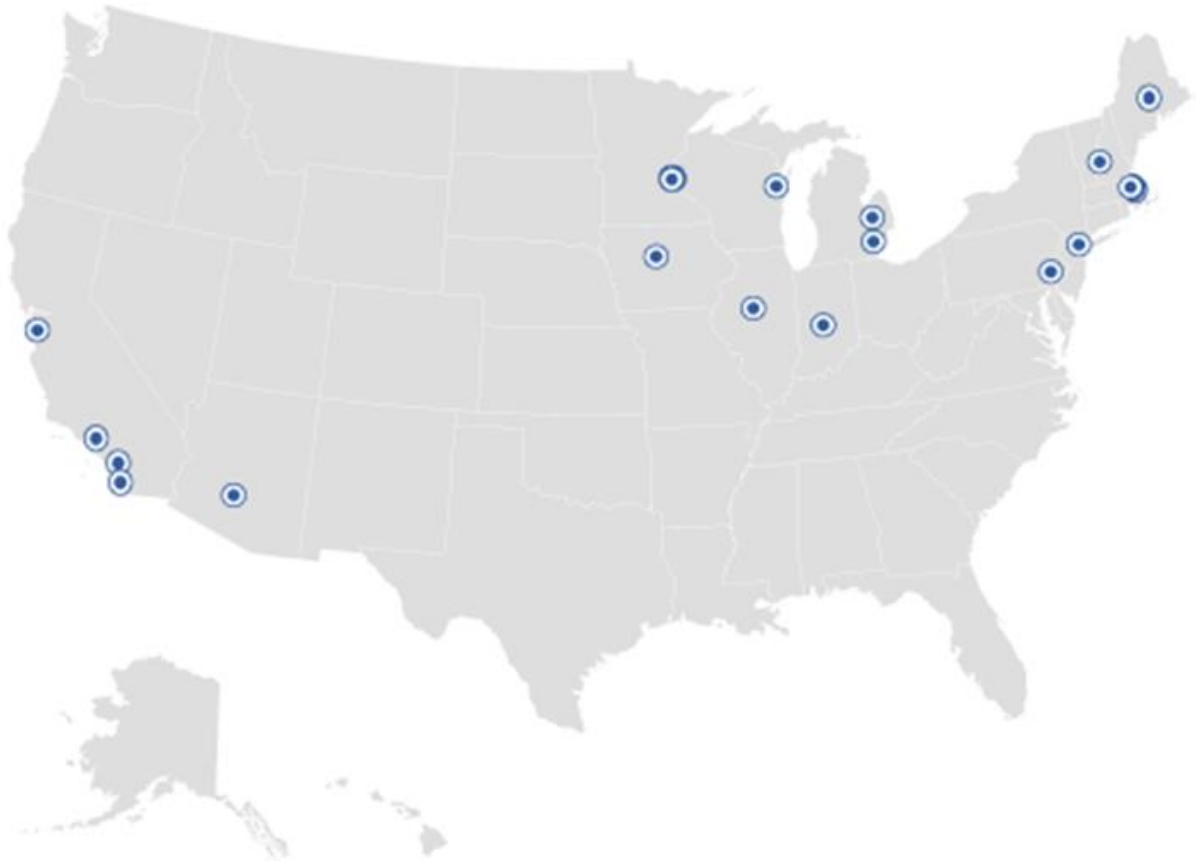
Medicare

Accountable Care Organizations (ACOs)

- Similar in concept to an HMO
- 5,000 or more enrollees
- Paid fee-for-service plus a performance bonus based on quality and cost savings
  - 50-60 percent of the savings (after the first 2%)
  - capped at 10-15 percent of their spending target
- A variety of provider configurations
- Need not include a hospital
- Must include primary care

Advanced Model

19 Pioneers ACOs (Already High Performing Sites)



http://innovation.cms.gov/initiatives/Pioneer-aco-model/

Pioneer ACO

More Aggressive Reward System

- 2 years of shared savings and shared losses
- Successful programs can move in year 3 to a population-based payment model
- Applicants were invited to submit alternate payment models (two did)

Pioneer ACO

HIT Requirements

"**at least 50% of the ACO's primary care providers have met requirements for meaningful use of certified electronic health records (EHR)** for receipt of payments through the Medicare and Medicaid EHR Incentive Programs. CMS recognizes that meeting this requirement is not sufficient for performing at the level expected of Pioneer ACOs, and **will give preference in selection to those organizations with advanced EHR capabilities**"

http://innovations.cms.gov/Files/fact-sheet/Pioneer-ACO-General-Fact-Sheet.pdf

Pioneer ACO

Advanced IT Requirements

- Population-based management tools and functions, e.g. registry/ability to aggregate and analyze clinical data
- Electronically exchange patient summary records across providers who are members of the Pioneer ACO and other providers in the community to ensure continuity of care
- Have access to multi-payer claims data and performance reports and the ability to share performance feedback on a timely basis with participating providers
- Enable beneficiary access to electronic health information, e.g., a patient portal to a provider EHR
- Demonstrate ability to coordinate care across full continuum of care

http://innovations.cms.gov/Files/fact-sheet/Pioneer-ACO-General-Fact-Sheet.pdf

Value-based Care

Not just the Government

Anthem chief executive officer Joe Swedish

Anthem's Swedish said its value-based contracts include "enhanced payments for performance and shared risk or bundled payment arrangements."

"We have 118 ACO arrangements as well as other collaborative efforts such as patient centered medical homes, hospital quality and safety programs, and other partnerships that share financial risk and gain," Swedish said.

Value-based Care

Not just the Government

Anthem's Joe Swedish said it's value-based contracts include **"enhanced payments for performance and shared risk or bundled payment arrangements."**

"We have 118 ACO arrangements as well as other collaborative efforts such as Patient centered medical homes, hospital quality and safety programs, and other partnerships that share financial risk and gain."

-- Joe Swedish, CEO, Anthem

Private Insurers

IT/Analytics Tools

Private Insurers

IT/Analytics Tools

Anthem

Giving Care Teams more points of data, and a “big picture” view of member health

Gaps in Care Analytics are run on 100% of our members. These opportunities are run continually and:

- Are completely accessible to nurses who use them to develop a better picture of members’ health and develop health coaching plans.
- Are displayed in our care management system, helping staff provide timely, personalized communication to both members and providers, and improving health outcomes.

Value-based Care

Data Matters