The Science of QI

Becoming a Learning Health System

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The Quality of Health Care Delivered to Adults in the United States

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Challenges

• Escalating costs
• Keeping up with discovery
  – *Doubling* time
    • 1950 = 50 years
    • 1980 = 7 years
    • 2010 = 3.5 years
    • 2020 = 0.2 years; 73 days
• Demand for changes in care delivery
BEST CARE AT LOWER COST

The Path to Continuously Learning Health Care in America

“Knowing is not enough; we must apply. Willing is not enough; we must do.”
--Goethe

iom.edu/bestcare

INSTITUTE OF MEDICINE
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Advising the Nation. Improving Health.
Use IT More Effectively

Real-time access to medical records
Streamline admin tasks

• Almost 50% of patients report information necessary for their care not available
• 25% of patients report re-order of tests to have info for Dx

Online Banking

• We can view our entire financial records, conduct transactions in second
Systems to Manage Complexity

*Help managing the growing complexity of medical knowledge and care required*

- > 200 doctors involved in treating the average PCP’s Medicare patients
- 180 activities /patient / day managed by clinicians in ICUs

**Manufacturers**

- Manage and track complex network of suppliers to meet changing demand
Make Health Care Safer

*Constantly assess performance and learn from experience to reduce errors and harm*

- 1/3 hospitalized patients harmed during their stay
- 1 in 5 Medicare patients readmitted to the hospital within 30 days

**Aviation Industry**

- Learns from past performance and adjusts operations to ensure safe flights
Improve Transparency

**Easy access to prices of tests and procedures**

**Reliable info about outcomes and quality**

- 85% of people not aware of comparative quality information about their health care
- 2/3 of patients believe inability to know price of care will inhibit controlling costs

**Appliances, Cars or Hotels**

- Easily compare prices and look at reviews
Promote Teamwork & Communication

**Communicate to provide seamless, coordinated care within and across settings**

- 50% of patients with chronic condition report info about Dx or Rx not available when needed
- 1/3 of adults say the health system is broken

**Mission Control Teams**

- Work constantly and seamlessly to coordinate multiple engineers, technicians for launch
Partner with Patients

Incorporate needs and preferences of patients into care decisions

• Less than half of patients receive clear info on benefits and trade-offs of Rx

• Almost half of patients not satisfied with level of control in medical decision-making

General Contractors

• Work with customers to build homes tailored to fit their needs and specs
Decrease Waste, Increase Efficiency

Do NOT spend $$ on unnecessary admin, inefficiencies and care that does no good

• 1/3 of health care expenditures do not improve health > $750 Billion

Factory Assembly Lines

• Continually monitored to improve quality, identify inefficiencies and remove waste
Implementing the Learning Health System: From Concept to Action

Figure Legend:

The 6 phases of the rapid-learning health care system, from scanning to dissemination.
Learning Health System

- Transformation in how we *generate* and *apply* knowledge
- Leverages health information technology (HIT)
  - Health data infrastructure
  - Access and apply evidence in real time
  - Draw new knowledge from real-world care-delivery processes to promote innovation and health system change
  - Grounded in rigorous research
- Bidirectional discovery
Evidence and Practice

• Evidence informs practice
• Practice informs evidence
• Immerse research into real world settings to create shared opportunities
• Iterative; innovations refined and new ones introduced to meet changing goals
Foundation

• **Desire** to continuously **improve** the system
• Be willing to be **vulnerable** and **transparent**, *learning both from mistakes and successes*
• **Trust** among leaders, clinicians, and researchers facilitates change, collaboration, and explicit identification of problems and innovative solutions
• **IT** supports use of data to guide decision-making
• System-wide reporting systems
Implementing the Learning Health System: From Concept to Action

**Internal**
- **Evaluate**
  Collect data and analyze results to show what does and does not work
- **Implement**
  Apply the plan in pilot and control settings
- **Design**
  Design care and evaluation based on evidence generated here and elsewhere

**Adjust**
- Use evidence to influence continual improvement

**External**
- **Disseminate**
  Share results to improve care for everyone
- **Internal and External Scan**
  Identify problems and potentially innovative solutions

In a learning health care system, research influences practice and practice influences research.
Implementation science definition

Implementation research is the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services.

It includes the study of influences on healthcare professional and organizational behavior.

Eccles and Mittman, 2006
Implementation science aims

1. Develop reliable strategies for improving health-related processes and outcomes; facilitate widespread adoption of these strategies

2. Produce insights and generalizable knowledge regarding implementation processes, barriers, facilitators, strategies

3. Develop, test and refine implementation theories and hypotheses; methods and measures

Courtesy of Brian Mittman, PhD
Root causes of implementation gaps: *Limitations of “empirical treatment”*
Implementing the Learning Health System: From Concept to Action

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**Implement**
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**Internal**

**External**

Internal and External Scan
Identify problems and potentially innovative solutions.
• QI Efforts can add work!
• “Working Harder”
  – Initial higher performance
  – Decreased ability to *sustain* ongoing improvement
  – Increased workarounds, errors
  – Loss of productivity!
• Staff at point of care essential, and . . . .
• Layering additional workload on busy, complex and inefficient system
• Evidence-based practices in the ICU such as preventing VAP, tight glycemic control
  – Added tasks equating to 4 hours of nursing / day
• Oh, and . . . . EHR implementation, improve documentation, access data at point of care
• Is it taking longer to do the same thing?
• Do we have bottomless elasticity and capacity?
• Extensive research shows
  – Increased workload demands lead to:
    • Change fatigue
    • Resistance
    • Cynicism
    • Burnout
    • Turnover
What do we do?

• Decrease the pace of change?
• Increase staffing?
• Work smarter? (and what does that mean?)
• Focus research on change that reduces workload while achieving goals of higher quality
  – Workflow assessment
  – engineers
Systematic Review of Time Studies Evaluating Physicians in the Hospital Setting

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Where Did the Day Go?—A Time-Motion Study of Hospitalists

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Relationship of Ineffective Communication to Adverse Events

- Ineffective Communication
- Incomplete Understanding of Plan of Care
- Culture of Low Expectations

Inability to catch and/or prevent errors before reaching the patient

Medical Error

Adverse Event
The work culture supports the team to systematically solve problems by themselves, and improve work they do towards the achievement of the overall targets and goal.
The Plight of Patients

- Half of debt sent to collection agencies is medical debt.
- 43 million people have medical debt.
- 60% of personal bankruptcies in the U.S. are the result of health care bills.
Discharge Instructions

What did that mean?

“No”

Do you have any ?’s
Center for Health Services Research

Applying Research to Optimize Care

- Medicine
- Nursing
- Pharmacy
- Public Health
- Dentistry
- Health Sciences
- Others
  - Arts and Sciences
  - Education
  - Social Work
  - Law
- Business and Economics
- Engineering
- Communication and Information
CHSR: Objectives

- Connect -- Catalyze -- Create
- Leverage expertise and facilitate collaboration among departments and colleges at UK
- Apply research to re-engineer health care delivery and optimize patient care
- Provide the expertise needed for UK Healthcare to become a learning health system as defined by the Institute of Medicine.
Achieving Patient-Centered Care and Optimized Health In Care Transitions by Evaluating the Value of Evidence
$15 million 3 Year Study

Improve Care Transitions

Spring 2014 Funding Cycle
PCORI Application Guidelines for
The Effectiveness of Transitional Care
Office for Value & Innovation in Healthcare Delivery
True Blue

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