The Role of Clinical Registries In Quality Improvement

John S. Rumsfeld, MD PhD FACC  
National Director of Cardiology, U.S. Veterans Health Administration  
Chief Science Officer, ACC National Cardiovascular Data Registry (NCDR)  
Professor of Medicine, University of Colorado
“Science tells us what we can do; Guidelines what we should do; Registries what we are actually doing.”

- Lukas Kappenberger MD
Heart Rhythm Society Policy Conference
Washington DC, 2005
High quality healthcare

Effective
Safe
Efficient
Timely
Equitable
Patient-Centered

U.S. Institute of Medicine. *Crossing the Quality Chasm: A New Healthcare System for the 21st Century*
National Academy Press 2001
The cycle of quality

- Discovery
- Outcomes
- Clinical Trials
- Quality Measures
- Guidelines

Guideline adherence versus mortality

- <65%: 5.9%
- 65-75%: 5.0%
- 75-80%: 4.6%
- >80%: 3.6%

Peterson ED et al. JAMA 2006;295:1912-20
Healthcare costs keep rising

http://www.cms.hhs.gov/NationalHealthExpendData/
But higher expenditure does not mean better quality

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

Elizabeth A. McGlynn, Ph.D., Steven M. Asch, M.D., M.P.H., John Adams, Ph.D., Joan Keesey, B.A., Jennifer Hicks, M.P.H., Ph.D., Alison DeCristofaro, M.P.H., and Eve A. Kerr, M.D., M.P.H.

Study Sets Correct Patient Care at 55%

By Joseph Pereira

In the study, researchers found 439 separate steps suggested for these conditions under established national guidelines or medical literature. It found that the proper steps were taken only 55% of the time. “Under the scoring system, a mark of about 90% would be the acceptable aim,” said Elizabeth A. McGlynn, the study’s lead researcher.

While 45% of study participants didn’t

A set of computerized guidelines for doctors to refer to might allay the problem.

The study said that only 64% of elderly patients had received or were offered a pneumonia vaccine and that 19,000 deaths annually could be prevented if appropriate numbers of vaccinations were given. Only 38% of the study subjects had been screened for colorectal cancer, it said, referencing another study showing that the proper level of annual screenings could save 5,600 deaths from this condition.

Researchers named the lack of proper care on numerous factors, including an absence of an accountability system for doctors and hospitals, a lack of awareness by doctors of the recommended care guidelines, and little financial incentive for insurance companies that are paying the bill to address the problem.
Gaps in Care: Discharge Quality Indicators

- ASA: 84%
- Beta Blocker: 75%
- ACE Inhibitor *: 56%
- Statins: 71%
- Smoking Counsel: 39%

* LVEF < 40%
# Known hyperlipidemia

From: Peterson E, Roe M. National Registry of MI, 2001
Variation in care = variation in quality of care

- Regional variation in the use of PCI

What are the quality concerns?

- Healthcare costs keep rising
- Variation in health care delivery
  - Underuse, misuse, and overuse

  gaps  errors  appropriateness
How do we improve quality of care?
Ineffective strategies

- Traditional didactic lectures / CME
- Newsletters
- Dissemination of clinical practice guidelines
- Computerized guidelines
- Medication profiles
- Drug utilization review

Adapted from: Cochrane Collection Reviews; Majumdar, McAlister, and Furberg, JACC 2004; and Furberg C. Ancel Keys Lecture, AHA Scientific Sessions 2003.
“If you don’t know how you are doing, you can’t get better.”

-Donald Berwick, M.D.
Hospitals with the most improvement

- Use credible data feedback
- Strong physician leadership backing quality improvement
- Substantial administrative support
- Shared goals for improvement

Bradley EH et al. JAMA 2001
Quality improvement

Iterative Evaluation

System changes
- Information technology
- Protocols
- Collaborative care

Data

Benchmarking

Clinician leaders

Administrative support

Rumsfeld JS et al.
U.S. Cardiology 2009;6:11-15
What is a clinical registry?

Clinical Data

Observational Database

Data elements and definitions

Quality Assessment

Quality Improvement

Clinical Research
NCDR registry programs

2400 hospitals
> 700 practices
> 12 million records

CathPCI Registry
ICD Registry
CARE Registry
ACTION-GWTG Registry
PINNACLE
IMPACT Registry

PAD
TAVI
Afib

Quality measurement and reporting

<table>
<thead>
<tr>
<th>PCI Quality Measures</th>
<th>Worse</th>
<th>Better</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Proportion of STEMI Pts with DBT &lt;= 90&quot;</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My Hospital: 65.6% (Rank: 87 of 389, Rank Percentile: 78)</td>
<td></td>
<td>0.8%</td>
</tr>
<tr>
<td>The proportion of primary PCI patients with DBT (door to balloon time) &lt;= 90 minutes. The goal is to have a DBT of &lt;= 90 minutes for all non-transferred patients pts having an ST elevated MI and having primary PCI. [Detail Line: 1767]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Risk Adjusted Mortality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My Hospital: 1.02% (Rank: 110 of 366, Rank Percentile: 60)</td>
<td></td>
<td>1.02%</td>
</tr>
<tr>
<td>Your hospital's PCI mortality rate adjusted using the ACC-NCDR® risk adjustment model [Detail Line: 1732]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. Incidence of Vascular Complications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My Hospital: 2.7% (Rank: 286 of 401, Rank Percentile: 30)</td>
<td></td>
<td>2.7%</td>
</tr>
<tr>
<td>Includes procedures with at least one vascular complication. [Detail Line: 2029]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Targets for quality improvement

- Pre-hospital ECG
- ↓ Door to reperfusion times
- ↓ Risk-adjusted mortality

Comparative effectiveness

DES versus BMS in elderly patients

Comparative safety and cost-effectiveness

Use of bleeding avoidance strategies among patients undergoing PCI

- M = Manual compression
- C = Closure device only
- B = Bivalrudin only
- BC = Bival+closure

Marso et al. JAMA 2010;303(21):2156-2164
One device, VasoSeal, demonstrated a high risk of any vascular complication compared to manual compression controls (OR = 2.38 [1.47-3.85; p = 0.0004])

This resulted in VasoSeal being taken off the market

Clinical registries can drive quality of care.
One story: the VA health care system

- Largest integrated health care system in U.S.
- 21 regions
- 153 hospitals (1,139 total facilities)
  - 77 hospitals with cardiac cath facilities
  - 48 hospitals with onsite PCI capability
Use electronic health record to directly capture data

Hospital
Healthcare system
Quality reporting
Quality improvement
“To provide the best healthcare for patients, you have to address the health of the healthcare system”

- Robert Jesse, M.D.
VA Principal Deputy Undersecretary of Health
Thank you

John.Rumsfeld@ucdenver.edu
The tools of quality

Evidence

Guidelines

Quality Metrics

Performance Measures

Quality Improvement

Brook RH et al. Measuring Quality of Care. NEJM 1996;335:966-970
Bonow RO et al. ACC/AHA Classification of Care Metrics: Performance Measures and Quality Metrics. JACC 2008;52: 2113-7
Quality of care

The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.
The role of clinical registries in quality improvement...

- Clinical data to measure quality of care
- Benchmarking (regional/national/international)
- Quality reporting
- Quality improvement
- Clinician link to professional societies
- Research to inform clinical and quality of care
Effective strategies

- Audit and feedback with benchmarking
- Local clinician leaders
- Face to face educational outreach
- Care coordinators / Disease management
- Computerized physician order/entry
- Critical pathways
- Real-time clinical reminders / decision support

Adapted from: Cochrane Collection Reviews; Majumdar, McAlister, and Furberg, JACC 2004; and Furberg C. Ancel Keys Lecture, AHA Scientific Sessions 2003.
“As is so often true in medicine itself, the critical first step is measurement.”
- Tom Lee, MD

Porter ME. What is value in health care? NEJM 2010;363:2477-2481
Lee TH. Putting the value framework to work. NEJM 2010;363:2481-2483