Title: Achieving high value cardiovascular care

Speaker: Steven M. Bradley, MD, MPH
Associate Cardiologist, Minneapolis Heart Institute® at Abbott Northwestern Hospital
Associate Medical Director, Minneapolis Heart Institute® Center for Healthcare Delivery Innovation

Date: Monday, January 9, 2017
Time: 7:00 – 8:00 AM
Location: ANW Education Building, Watson Room

OBJECTIVES
At the completion of this activity, the participants should be able to:
1. Describe sources of low-value cardiovascular care.
2. List strategies to achieve high-value cardiovascular care.
3. Apply patient-reported health status measures in assessment of healthcare value.

ACCREDITATION
Physician
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Allina Health designates this live activity for a maximum of 1.0 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Nurse
This activity has been designed to meet the Minnesota Board of Nursing continuing education requirements for 1.2 hours of credit. However, the nurse is responsible for determining whether this activity meets the requirements for acceptable continuing education.

DISCLOSURE STATEMENTS
Moderator(s)/Speaker(s)
Dr. Bradley has disclosed that he does not have a conflict of interest in making this presentation.

Planning Committee
Dr. Alex Campbell, Dr. Kevin Harris, Rebecca Lindberg, Dr. Michael Miedema, Dr. JoEllyn Carol Moore, Dr. Scott Sharkey, and Jolene Bell Makowesky have declared that they do not have any conflicts of interest associated with the planning of this activity. Dr. David Hurrell declares the following relationship –Boston Scientific: Chair, Clinical Events Committee.
Better Patient Health at Lower Cost: Achieving High-Value Cardiovascular Care

Steven M. Bradley, MD MPH
Associate Medical Director, Center for Healthcare Delivery Innovation
Minneapolis Heart Institute

Better Patient Health at Lower Cost: Achieving High-Value Healthcare

Steven M. Bradley, MD MPH
Staff Cardiologist, VA Eastern Colorado Health Care System
Associate Professor of Medicine, University of Colorado School of Medicine
Associate Director, VA CART Program
Disclosures

- Member, American College of Cardiology Rating Panel for Appropriate Use Criteria

- Consultant, Workgroup for the Development, Reevaluation, and Implementation of Hospital Outcome/Efficiency Measures, Centers for Medicare & Medicaid Services
“...a utopian vision of a health system that might occur to anyone possessed of a modicum of common sense but not too familiar with the real world of health care.”

Uwe Reinhardt, PhD

What they got Right

“In God we trust. All others must bring data.”

W. Edwards Deming

https://hbr.org/2013/10/the-strategy-that-will-fix-health-care
Objectives

• What is value in healthcare?

• Signals of low-value care

• Sources of, and solutions to, low value care

• Competing on high-value care
Value in Healthcare

\[
\text{VALUE} = \frac{\text{OUTCOMES}}{\text{COST}}
\]

- Tier 1: Health Status Achieved or Retained
- Tier 2: Process of Recovery
- Tier 3: Sustainability of Health

- Condition specific
- “Cycle of care”

Value as a Unifying Quality Aim

\[
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Institute of Medicine Aims for High Quality Care

- Safe
- Effective
- Efficient
- Patient-Centered
- Equitable
- Timely

Whose Perspective?

Objectives

• What is value in healthcare?

• Evidence of low-value care

• Sources of, and solutions to, low value care

• Competing on high-value care
Regional Variation in the Use of Cardiac Procedures


• Possible reasons
  – Patient mix
  – Patient preferences
  – Underutilization
  – Overutilization

Low Value Care
Rates of Coronary Disease at Angiography Vary in U.S. Practice

4,829 of 22,538 patients (21.4%) had normal coronary angiography

Normal Coronary Rates Vary Across VA Hospitals

Median hospital 21%
- Range 6% to 49%


Variation in Utilization

- Changes in reimbursement alone are insufficient to address variation in use
- Findings reflect variation in use, not value
- Can we identify low value care?
- How do we improve healthcare value?

Objectives

- What is value in healthcare?
- Signals of low-value care
- Sources of, and solutions to, low value care
- Competing on high-value care
Sources of Low Value Healthcare

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Appropriate Use Criteria

- Guidelines-based assessment of procedural “appropriateness”

- Appropriate = benefit > risk

- Inappropriate = risk > benefit
  - No anticipated benefit (OVERUSE)

Development of Appropriate Use Criteria

Literature review and synthesis of the evidence → List of clinical scenarios

Expert panel rates the indications

1st Round – No interaction
2nd Round – Panel interaction

Appropriateness Score
(7-9) Appropriate
(4-6) Uncertain
(1-3) Inappropriate

Appropriateness Determination

 PCI more appropriate if:

- Acute indication
- Higher-risk findings on stress test
- Increasing burden of CAD
- More symptoms
- Antianginal meds

Example Appropriateness Ratings for PCI

Validating the Appropriate Use Criteria

Health Status benefit of PCI Limited to Indications rated Appropriate

Angina Frequency


Broad Variation in the Use of Inappropriate PCI

Rate of Inappropriate Elective PCI

• Hospital Median 10.8%
• Hospital Range 0%-55%

Minimizing Inappropriate Use of PCI

Washington State COAP: Regional QI Program

Improvements Limited to a Minority of Hospitals

Proportion Inappropriate


Challenges

• Imperfect Criteria
  – MHI inappropriate PCI → nearly all clinically appropriate

• “Living” document
  – Next revision...

• Susceptible to gaming
  – Health status measures
Sources of Low Value Healthcare

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30-day PCI Cost and Outcomes: Readmission and Value

- Readmission an emerging quality measure
  - How much does it contribute to low-value care

- Comparison of facility-level 30-day risk-standardized readmission, mortality and cost
  - 32,080 patients who received PCI at any one of 62 VA hospitals from 2008 to 2011
Similar Mortality Regardless of Cost

Risk-Standardized Outcome Ratios
Hospitals Ordered by Ascending Cost

Spearman rho = -0.15, p = 0.25


Readmission Does Not Impact 30-Day Cost

Risk-Standardized Outcome Ratios
Hospitals Ordered by Ascending Cost

Spearman rho = 0.16, p = 0.21


Facility-Level PCI Costs

Readmission is a small proportion of 30-day cost

Index PCI 83.1% of 30-day cost
• Range 60.3 to 92.2%

Readmission after PCI 5.8%
• Range 2.0-12.7%

We had unnecessary variation in our processes and practice.
Implications

• Identify wasteful and inefficient care
  – Material goods (supply chain)
  – Care delivery (processes)
    • Lean/Six Sigma and TDABC Methods

• Fee-for-service or Bundled payment?
  – Emphasize index cost/inefficiency>>>downstream

Sources of Low Value Healthcare

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• Much of healthcare → improves health status
  – Symptom burden, functional status, and health related quality of life

• We lack these outcomes
  – How can we measure value?!?
**Patient-Reported Health Status Measures**

<table>
<thead>
<tr>
<th>Clinical Condition</th>
<th>Instrument</th>
<th># of Items in Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary artery disease</td>
<td>MacNew Heart Disease Health-related Quality of Life</td>
<td>27-items</td>
</tr>
<tr>
<td></td>
<td>SAQ-7</td>
<td>7-items</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>AF-QoL</td>
<td>18-items</td>
</tr>
<tr>
<td></td>
<td>Atrial Fibrillation Effect on Quality-of-Life (AFEQT) Questionnaire</td>
<td>20-items</td>
</tr>
<tr>
<td>Heart failure</td>
<td>Minnesota Living with Heart Failure Questionnaire (MLHFQ)</td>
<td>21-items</td>
</tr>
<tr>
<td></td>
<td>KCCQ-12</td>
<td>12-items</td>
</tr>
<tr>
<td>Peripheral artery disease</td>
<td>Peripheral Artery Questionnaire (PAQ)</td>
<td>20-items</td>
</tr>
<tr>
<td></td>
<td>Vascular Quality of Life Questionnaire-6 (VascuQoL-6)</td>
<td>6-items</td>
</tr>
</tbody>
</table>
ICHOM Standard Measure Sets

How to...
- Administer
- Score
- Interpret
- Act

...in routine care?

Patient Reported Health Status (PROST)
A solution to health status capture

<table>
<thead>
<tr>
<th></th>
<th>Preprocedural Period</th>
<th>PCI</th>
<th>Post-procedural period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Health</td>
<td>Consult entered for</td>
<td>Clinical documentation of</td>
<td>Health status captured</td>
</tr>
<tr>
<td>Record</td>
<td>coronary procedure</td>
<td>PCI in CART</td>
<td></td>
</tr>
<tr>
<td>PROST</td>
<td>Triggered to enroll</td>
<td>Inform data for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>patient</td>
<td>follow-up calls</td>
<td></td>
</tr>
<tr>
<td>Patient</td>
<td>Patient answers</td>
<td>Patient answers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROST questions</td>
<td>PROST questions</td>
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<table>
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<tr>
<th>Measure</th>
<th>Preprocedural</th>
<th>Follow-up Results (1 month)</th>
</tr>
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<tbody>
<tr>
<td>SF-12/BREF summary</td>
<td>69</td>
<td>175</td>
</tr>
<tr>
<td>Domain scores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF-12/BREF summary</td>
<td></td>
<td></td>
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Results for Example Patient

- SF-12/BREF summary: 69
- Physical Limitation (PL): 60
- QOL: 60
- SF-12/BREF summary: 175
- Physical Limitation (PL): 100
- QOL: 100

PROST Reports in Clinical Care

**Patient Reported Angina Summary Score**: The angina-related summary score combines the patients' average symptom burden, functional limitations, and angina-related quality of life over the prior 4 weeks.

**Patient Reported Angina Frequency Score**: Average angina frequency over the prior 4 weeks.


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Sources of Low Value Healthcare

VALUE = \( \frac{\text{OUTCOMES}}{\text{COST}} \)

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Competing on Value: A Strategic Advantage

Cheaper Surgery Sends Lowe’s Flying to Cleveland Clinic

[Article snippet]

Walmart, Lowe’s enter bundled pay deal with four health systems

The Seattle Times

Boeing’s deal with top-rated Cleveland Clinic means about 83,000 managers, some retirees and family members can get a big cost advantage on heart procedures, as well as free travel and lodging, while the aerospace giant will get a fixed-price menu for complex, often unpredictably pricey surgeries.
Competing on Value:
CMS Alternative Payment Models

Comprehensive Care for Joint Replacement
– 90-day payment bundle in 75 metro area
– Health status capture contributes to quality metric

Episode Payment Models for AMI and CABG
– 90-day payment bundle in 98 metro areas

Hospital-Level Patient-Reported Outcome-Based Performance Measure for Elective PCI
– Completed public comment → pilot implementation

https://innovation.cms.gov/initiatives/cjr
https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments

Competing on Value:
What’s Needed to Compete?

“In God we trust. All others must bring data.”
W. Edwards Deming

https://hbr.org/2013/10/the-strategy-that-will-fix-health-care
Competing on Value:
MHI Center for Healthcare Delivery Innovation

- Leverage Existing Data Infrastructure
  - Cost, Outcomes, and Processes of Care
  - Multilevel view of variation and inefficiency

“Address quality gaps and unnecessary variation in healthcare delivery through novel patient-centered solutions that optimize patient experience and health outcomes while reducing cost”

Example Achievements of MHI HDI

![Use of Bleeding Avoidance Strategies in High Bleeding Risk PCI](chart1)

![Post-Operative Atrial Fibrillation](chart2)

Reducing ICU Use after CEA

Endless Opportunities for MHI HDI

Innovation: The implementation of creative ideas in order to generate value¹

Wearables  Artificial Intelligence  Spatial Analysis
Contextual Data  Predictive Analytics  mHealth
Health Status  Genomics  Proteomics
Patient Generated Data  Metabolomics  Precision Medicine
Shared Decision Making
Remote Monitoring

1. https://www.ideatovalue.com; Jeffery Baumgartner
2. Image at https://www.flickr.com/photos/pere/523019984

Conclusion

• Evidence of variation in healthcare value

• Attributable to misuse, overuse, and underuse
  All can be addressed

• Improving healthcare value offers a strategic advantage that aligns the healthcare system with patient goals
Special Thanks

- MHI HDI
  - Craig E. Strauss, MD, MPH
  - Pam Rush, RN, MS
  - HDI Team

- VA CART Program
  - John S. Rumsfeld, MD PhD
  - Thomas M. Maddox, MD MSc
  - Meg Plomondon, PhD

- Denver/Seattle COIN
  - Michael Ho, MD PhD
  - Colin I. O’Donnell, MS
  - Paul Hebert, PhD

- Office of Analytics and Business Informatics
  - Stephan D. Fihn, MD MPH

- COAP
  - Chris Bryson, MD MPH
  - Chuck Maynard, PhD

Thank you