AHRQ Quality Indicators Program Update

OECD Health Care Quality Indicators Expert Group
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AHRQ’s New Mission

1. To produce evidence to improve health care quality
2. To produce evidence to make health care safer
3. To produce evidence to increase access to health care
4. To produce evidence to improve health care affordability, efficiency and cost transparency
Voluntary all-payer data partnership (HCUP)
AHRQ Quality Indicators

Inpatient Quality Indicators
Risk-adjusted Mortality Utilization Volume

Prevention QIs (Area Level)
Avoidable Hospitalizations / Other Avoidable Conditions

Pediatric Quality Indicators
Neonatal QIs

Patient Safety Indicators
Complications, Unexpected Death
Increasing usability of AHRQ QIs

- Hospital-level composite measures (PSI, PDI, IQI diagnoses, IQI procedures)
- Area-level composite measures (PQI)
- Toolkit to help hospitals use QIs to improve care
  - www.ahrq.gov/qual/qitoolkit
- My Own Network by AHRQ (MONAHRQ)
  - http://monahrq.ahrq.gov
- National Quality Forum endorsement
- Medicare and Medicaid programs
  - http://www.medicare.gov/hospitalcompare/search.html
  - Hospital Value-Based Purchasing
Steps to Using MONAHRQ

1. Download MONAHRQ from MONAHRQ.ahrq.gov

2. Load your local inpatient discharge data/ED data if available

3. Load other measure results

4. Select website and reporting customization options

5. Output a healthcare reporting website
States Using AHRQ QIs in their Public Reports

AHRQ QIs appear in public reports in 32 states
### Health Data

*Organization*

#### Search Form

- **Search:** Acute Care Hospital
- **Zip:**
- **Region:** Barren River

#### Topic:
- Heart attack and chest pain

#### Sub Topic:
- Results of care: Information on...

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Ratings about heart attack care. A heart attack, also called an AMI or acute myocardial infarction, happens when the arteries leading to the heart become blocked and the blood supply slows or stops.

#### Sort by:
- Hospital Name (A to Z)

#### Compared To:
- National Average

#### Display Type:
- Symbols

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<table>
<thead>
<tr>
<th>Select hospitals to compare</th>
<th>Hospital Name</th>
<th>How patients rate this hospital overall</th>
<th>Aspirin prescribed before leaving the hospital</th>
<th>Heart Attack Patients Given a Prescription for a Statin at Discharge</th>
<th>Medicine to reduce blood clots given within 30 minutes of getting to the hospital</th>
<th>Procedure to open blood vessels done within 90 minutes of getting to the hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare</td>
<td>facility 1</td>
<td>Average</td>
<td>Better than average</td>
<td>Not enough data to report</td>
<td>Not enough data to report</td>
<td>Not enough data to report</td>
</tr>
<tr>
<td></td>
<td>facility 2</td>
<td>Average</td>
<td>Better than average</td>
<td>Not enough data to report</td>
<td>Not enough data to report</td>
<td>Not enough data to report</td>
</tr>
<tr>
<td></td>
<td>facility 3</td>
<td>Below average</td>
<td>Not enough data to report</td>
<td>Better than average</td>
<td>Not enough data to report</td>
<td>Not enough data to report</td>
</tr>
</tbody>
</table>
Construct validity: Case control study of PSI 12 (Postoperative DVT/PE)

- **Cases (up to 20/hosp):**
  - Unilateral or Bilateral TKA
  - Oct 2008 to Mar 2010
  - >40 yrs, nonpregnant
  - PSI-12 code for VTE within 90 days

- **Controls (up to 40/hosp):**
  - Unilateral or Bilateral TKA
  - Oct 2008 to Mar 2010
  - >40 yrs, nonpregnant
  - NO PSI-12 code for VTE within 90 days

- Classified FDA-approved pharmacologic prophylaxis as receipt of the recommended dose at the recommended starting time (per package insert) before or after surgery, continued until at least day of discharge
- Patients who were diagnosed with VTE on the day of surgery or the day after surgery were not included in the case control analysis
- Risk factors: age, obesity (BMI), type of TKA, race/ethnicity, date of ambulation, personal or family history of VTE, and comorbid conditions
- Adjusted for conditional stratified sampling of controls

Sadeghi et al., J Hosp Med 2013
Multivariate adjusted odds ratios and 95% confidence intervals

- Outcome: Any VTE event diagnosed Day 2 of surgery or later
- Excluded one hospital that screened TKA patients routinely for VTE

<table>
<thead>
<tr>
<th>Predictive Factor</th>
<th>Odds Ratio (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.02 (0.99 – 1.05)</td>
<td>0.20</td>
</tr>
<tr>
<td>Gender (ref: male)</td>
<td>1.7 (0.9 – 2.9)</td>
<td>0.90</td>
</tr>
<tr>
<td>Ambulation (ref: no ambulation)</td>
<td>0.3 (0.1 – 0.9)</td>
<td>0.005</td>
</tr>
<tr>
<td>Taking steps day 1 or 2</td>
<td>0.7 (0.2 – 2.1)</td>
<td>0.56</td>
</tr>
<tr>
<td>Taking steps after day 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of TKA (ref: unilateral TKA)</td>
<td>4.2 (1.9 – 9.1)</td>
<td>0.004</td>
</tr>
<tr>
<td>Bilateral TKR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended pharmacologic prophylaxis (ref: only mechanical)</td>
<td>0.5 (0.3 – 0.8)</td>
<td>0.01</td>
</tr>
<tr>
<td>BMI ≥ 35 (ref: BMI &lt; 35)</td>
<td>0.9 (0.5 – 1.6)</td>
<td>0.66</td>
</tr>
</tbody>
</table>
AHRQ QI enhancements

- ICD-10-CM/PCS conversion
  - Postponed from 1 October 2014 to 1 October 2015
  - Testing on dual coded data
  - Opportunities for improved performance ("enhanced")

- Emergency Department Prevention Quality Indicators (some require data linkage)

- Enhanced risk-adjustment

- Ambulatory Surgery or ED Indicators and/or ED-enhanced PSIs? (require data linkage)

- Reconsider exclusions that are no longer necessary with Present on Admission reporting?
Number of Codes

<table>
<thead>
<tr>
<th>2013</th>
<th>Diagnosis</th>
<th>Diagnosis</th>
<th>Procedure</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. Total</td>
<td>13,000</td>
<td>79,502</td>
<td>4,000</td>
<td>71,920</td>
</tr>
</tbody>
</table>
ICD-10-PCS

(International Classification of Diseases, 10th Revision, Procedure Coding System)

Inpatient Procedure

What’s not here:
- Diagnosis for which procedure is performed (e.g., hernia)
- Combination or eponymic procedures (e.g., Whipple)
# ICD-10-PCS Root Operations

<table>
<thead>
<tr>
<th>ICD-9-CM Procedure Term</th>
<th>ICD-10-PCS Procedure Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amputation</td>
<td>Detachment</td>
</tr>
<tr>
<td>Amniocentesis</td>
<td>Drainage</td>
</tr>
<tr>
<td>Cystoscopy</td>
<td>Inspection</td>
</tr>
<tr>
<td>Closed Reduction</td>
<td>Reposition</td>
</tr>
<tr>
<td>Debridement</td>
<td>Excision, Irrigation, Extirpation</td>
</tr>
<tr>
<td><strong>Total</strong> Mastectomy</td>
<td>Resection</td>
</tr>
<tr>
<td><strong>Subtotal</strong> Mastectomy</td>
<td>Excision</td>
</tr>
<tr>
<td>Tracheostomy</td>
<td>Bypass</td>
</tr>
<tr>
<td>Cesarean Section</td>
<td>Extraction of Products of Conception</td>
</tr>
<tr>
<td>Incision</td>
<td>No ICD-10-PCS term</td>
</tr>
</tbody>
</table>
Procedure Format

• ICD-9-CM (volume 3 for procedures)
  – Low cervical cesarean section
    
    7 4 1

• ICD-10-PCS (Procedure coding system)
  – Obstetric (1), Extraction (OD), products of conception (0), open
    approach (0), no device (Z), low cervical (1) – 7 characters
    
    1 0 D 0 0 0 Z 1
Building Blocks of AHRQ QIs

Set names provide the basic foundation or building blocks for 91 Quality Indicators:

- Denominator inclusions
- Denominator exclusions
- Numerator inclusions
- Risk adjustors

<table>
<thead>
<tr>
<th>Set Names</th>
<th>Number of Set Names</th>
<th>Number of ICD-9 codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis Set Names</td>
<td>160</td>
<td>7,925</td>
</tr>
<tr>
<td>Procedure Set Names</td>
<td>68</td>
<td>1,769</td>
</tr>
<tr>
<td>Totals</td>
<td>228</td>
<td>9,694</td>
</tr>
</tbody>
</table>
10 Expert Work Groups

<table>
<thead>
<tr>
<th>Experts</th>
<th>Number</th>
<th>Cross-cut of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>27</td>
<td>6=Pacific, 2=Mountain, 5=Central, 14=East</td>
</tr>
<tr>
<td>Nurses</td>
<td>22</td>
<td>0=Pacific, 1=Mountain, 5=Central, 16=East</td>
</tr>
<tr>
<td>Coding Professionals</td>
<td>26</td>
<td>4=Pacific, 1=Mountain, 7=Central, 14=East</td>
</tr>
<tr>
<td>QI Data Users</td>
<td>9</td>
<td>2=Pacific, 0=Mountain, 0=Central, 6 =East</td>
</tr>
</tbody>
</table>

- Cancer, Cardiac, Critical Care/Pulmonary, Infection, Internal Medicine, Neonatal/Pediatric, Neurology, Obstetrics and gynecology, Orthopedics, General and trauma surgery
- **Clinical and nursing expertise:**
  Are ICD-9-CM and ICD-10-CM/PCS codes clinical equivalents? Or do any contradict the intent of the set name?
- **Coding expertise:**
  Are there coding guidelines that should be considered? Are there missing codes that were not captured?
- **Quality measurement expertise:**
  Are there combinations of codes that warrant changes to the logic of the indicators?
Potential impact on time series analysis
Simulation based on dual coded data
• Collaborative effort to develop and validate community health indicators using ED administrative data

• ED data are being used as a “window” into social and community factors that impact health\textsuperscript{1,2,3}

• Why measure community health?
  ► Identify concerns and target resources
  ► Identify emerging trends
  ► Evaluate public health interventions/best practices

• Example Metrics:
  ► Non-traumatic dental conditions in the emergency department
  ► Non-psychotic mental health conditions in the emergency department
  ► ED re-visits for substance abuse
## Reconsider exclusions

**Example: PSI 3, Pressure ulcer**

<table>
<thead>
<tr>
<th>Exclusion Criterion</th>
<th>Related to POA</th>
<th>Related to Preventability</th>
<th>Little or No Risk</th>
<th>Related to Face Validity</th>
<th>Inherent in QI Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion 1 (Exclude if debridement or pedicle graft is the only major procedure)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusion 2 (Exclude if debridement or pedicle graft occurs before or same day as 1st major procedure)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusion 3 (Exclude Hemiplegia and Paraplegia and Quadriplegia)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusion 4 (Exclude Spina Bifida and Anoxic Brain Damage)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusion 5 (Exclude MDC 9) (Principal diagnosis of Skin, Subcutaneous Tissue, and Breast)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusion 6 (Exclude MDC 14) (Principal diagnosis of pregnancy, childbirth, and puerperium)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Exclusion 7 (Exclude length of stay &lt;5 days)</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Exclusion 8 (Exclude Admitted from Acute Care Facility or LTC)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Enhanced risk-adjustment

• Socioeconomic characteristics (for some users)
  ► Insurance status, neighborhood education/income
• ICD-10-CM/PCS enhanced risk factors
  ► Procedure subtypes, unilateral vs. bilateral
• Population prevalence of chronic disease (for relevant PQI and PDI, e.g., diabetes, HF)
  ► Bayesian small area estimates based on CDC telephone survey data (BRFSS)
• Interaction effects
  ► Age, multiple comorbidities
• Laboratory data from electronic health records
US Hospitals’ Adoption of Electronic Health Record Systems, 2008–2012

DesRoches C M et al. Health Aff 2013;32:1478-1485
For Additional Information…

- [www.qualityindicators.ahrq.gov](http://www.qualityindicators.ahrq.gov)
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  [psromano@ucdavis.edu](mailto:psromano@ucdavis.edu)