Real-Time Quality Measurement for Anesthesiology & Pay for Performance

Can a Data Driven System Change Physician Behavior to Achieve High Performance Anesthesia Healthcare?

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Charlotte, NC

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What is driving P4P?
Catalyst for Change

“Numerous studies have highlighted the high rate of medical errors and the need for fundamental changes in the health care delivery system to eliminate gaps in quality. One early catalyst for growth in pay-for-performance was the Institute of Medicine (IOM) report *To Err is Human* in 1999, which estimated 98,000 preventable deaths due to medical errors of commission each year. IOM outlined the need to focus on Safe, Timely, Efficient, Effective, Equitable and Patient Centered (STEEEP) care…”

National Initiatives for Healthcare Improvement

- IOM - STEEEP
- IHI - IMPACT, 100K Lives Campaign, 5 Million Lives Campaign
- CMS - SCIP, State QIO’s, 8th Scope of Work
- AHRQ - CAHPS Survey
- JCAHO - National Patient Safety Goals
- Leapfrog/HealthGrades - Public Reporting and Transparency
What is driving P4P?

- Healthcare costs are rising rapidly - 2005 Advisory Board Value Gap

Managed Care P4P

Nationwide Interest In P4P

Up to 4 percent of hospital payments tied to quality indicators; 90 hospitals participating
Reimbursement based on implementation of medication safety improvement initiatives and use of select JCAHO standards
Hospitals receive reward the year after performance is measured

Average reward in 2002 about $300K

BOEING

$3,000

Low Reward

High Reward

Noncompliant Hospital

Compliant Hospital

Patient Out-of-Pocket Expense

$3,000

$5,000

$250 Noncompliant Hospital

$0 Compliant Hospital

Anthem

Developed the Hospital Quality Program in 1993; more than 310 hospitals participating across Kentucky, Indiana and Ohio
Report card of 100+ clinical quality indicators track individual hospital performance against network performance
Beginning in 2002, report card standings used to implement graduated rate increases during contract renewal

Independence Blue Cross

Developed Quality Incentive Payment System in 2002; 13 hospitals currently participating
Hospitals agree to base part of annual rate increase on performance against agreed-upon quality measures from JCAHO, the Leapfrog Group, and the Pennsylvania Health Care Cost Containment Council
Range of annual rate increase negotiated separately with each hospital system, although maximum is four percent
Additional hospitals to come on board as contracts are renegotiated

Empire

Hospitals eligible for 4 percent incentive payment for "eligible admissions"
In 2002, 29 hospitals met CPOE and intensivist staffing requirements
Total bonus payment of $195,000 for 1,395 admissions across all hospitals

0.4% "eligible" for bonus

Incentive Payment

Independent

Typical Hospital Benefit

$5,725

CPOE Cost

$3 M

Hiware

Supermarket chain with 20,000 employees in 5 New England States
$250 copay waived for employees going to a "high quality" hospital
Initially, hospitals adhering to Leapfrog standards considered "high quality"; definition later expanded to hospitals meeting "high quality standards based on HealthGrades measures"
CMS Program Imperative

Former Medicare administrator Mark McClellan, MD, PhD, said in a recent report regarding P4P demonstration projects, “we are seeing an increased quality of care for patients which will mean fewer costly complications – exactly what we should be paying for in Medicare.”
P4P/Dollars at Risk

- **HCAHPS** *Hospital Consumer Assessments of Healthcare Providers & Systems*
  - CMS survey instrument to collect information on hospital patients’ perspectives of care received in the hospital. Allows patients and physicians to compare patient satisfaction scores of multiple facilities.

- **TRHCA** *Tax Relief and Healthcare Act of 2006*
  - Provided 1.5% bonus payment for physicians reporting data on relevant measures
  - Extension of PQRI for 2008—$1.3 billion in funds for physician quality

- Medicare SCIP Initiative Reimbursement
  - 2% withhold
How can data drive high performance anesthesia care?

- Select appropriate metrics which are clinically appropriate (ex: patient satisfaction, practitioner performance, timeliness and efficiency measures, outcomes-systems measurements)
- Utilize clinical data rather than claims based
- Aggregate clinical data facilitates review and monitoring by CQI Committee
- Aggregate data, along with evidence based medicine leads to system wide best practices
- Implemented best practices are re-measured for improvement
- Balanced scorecards developed as mechanism to facilitate high performance P4P
Challenge: How do you change physician behavior from episodic to systems approach?

- Real time clinical data feedback to individual practitioner—continuous positive/negative feedback loops
- Transparency—virtually 100% data capture; Audit process assures veracity of data
- Uniform clinical definitions: apples to apples measurements
- Ease of implementation
- Field tested—wide spectrum of clinical settings-hospital level one trauma center to rural hospitals, office practice pain management; >100K patients annually
- Opportunity to achieve substantive improvements in patient satisfaction, efficiency, quality of care
- Practitioner/Site specific
- Scorecards established to compare clinicians to their peers and group/practice to a defined benchmark
- Communicate expectations/ Encourage positive incentives
How do we Generate Physician Buy-In?

Committed Leadership
Communicate Expectations
Appropriate Model
Continuous Feedback Loop
Reliable Data
Appropriate Incentives
How do we Generate Physician Buy-in?

Organizational Design
Creating Physician Buy-in
LINK CQI MODELS to Scientific Method

- Six Sigma—Define, Measure, Analyze, Improve, Control (DMAIC)
- Deming Cycle—Plan–Do–Study (Check)–Act (PDCA, PDSA)
- JCAHO—Plan Design, Measure, Assess, Improve
- SAC CQI System—Metrics, Measure, Feedback, Analyze, Implement, Monitor
Since 1997, SAC has developed, field tested and refined a data driven CQI program to reduce medical errors

- Uses real-time clinician entered data through the continuum of care vs. DRGs/claims data
- 50 clinical indicators (patient satisfaction, efficiency/timeliness, practitioner performance and clinical outcomes)
- Broad application to a wide spectrum of clinical settings—Level I Trauma Center to rural hospital, ASC, pain management centers
- Field tested on >100K patients annually in OR and office based settings
- Information is practitioner specific and location specific facilitating change management for the individual practitioner
Southeast Anesthesiology Consultants
CQI System

- Audits assure that data is accurate
- Clinical definitions assure Apples to Apples measurements and facilitate risk stratification
- Alerts facilitate focus on key metrics or benchmarks
- Performance measures/balanced scorecards facilitates clinician behavior change
- Provides a continuous real time feedback loop to providers, CQI committees, department chiefs, Executive Committee, administrators
- Analysis of aggregate data & EBM guide development of system-wide best practices and systems approach to error reduction
Data Entered Through Continuum of Care
Performance Assessment

Data Collection Tool

Process Assessment
CQI Committee

PCs
PDAs/Tablets
Scanners

Data Warehouse
Analysis

Performance Assessment
To MD

Process Assessment
CQI Committee

P4P Scorecard

Best Practices
Benchmarks

Performance Improvement
Real-time Feedback to Practitioners

- Immediate positive and negative feedback to practitioner
- Site/Department specific real time results to Department CQI Chair and Clinical Chief
- Real Time Aggregate data by location or multiple locations to administrator, CQI Committee, Leadership
- Critical alerts sent by email when occur
- Threshold alerts sent by email when pre-set threshold exceeded
- Summary reports emailed with daily results for all events
- Provide opportunity for early interventions
Critical Alert

intranet@seanesthesiology.com

To: Sample Doctor

Critical Alert

Dr. Sample Doctor,

On 01/24/2008 quality indicator # 23 Awareness under general anesthesia was reported for your patient JOHN SMITH. For your reference, the medical record number for the patient is 0001234567.

To see the QA sheet for this patient you can access your report online at https://www.seanesthesiology.us/. Once you are at the site, select Interactive QA reports, then CQI Report. When the report comes up click on the number of patients for this indicator to get a list of patients. Select this patient from that list and click on the medical record number. This will provide you with a copy of the patient's QA sheet. Please let me know if you would like me to walk you through this process or assist you with any problems.

Janet Beck
Customized Site Report
Practitioner Balanced Scorecard
Patient Satisfaction Results Confirmed by Press Ganey

Overall Anesthesia Care Would Recommend

- CQI Program Results*: 99.63
- Press Ganey Results**: 96.9

Would Recommend

- CQI Program Results*: 99.68
- Press Ganey Results**: 93.8

*29,722 patient surveys received. Confidence Level/Interval – CQI Results 99%+ .52
**163 patient surveys received. Confidence Level/Interval – Press Ganey 95%+6.56
SAC Timeliness and Efficiency-Consistent Results

- Practice-wide, less than one fourth of one percent of cases are cancelled because of NPO violations or Abnormal Labs.
Practitioner Performance and Clinical Outcomes

• Out of 50 quality indicators tracked, the incidence of serious adverse events was less than 1%
• In 2006, information was collected on 83,952 patients

Results: SAC National Benchmark**
- Death 0.05% 1.33%
- Death - Anesthesia 0.00% 0.12 – 1.06%
- Cardiac arrest 0.10% 0.44 – 1.72%
- Failed intubations 0.01% 0.05%
- Myocardial infarction 0.02% 0.19%
- Stroke 0.02% < 1%
- Recall 0.00% 0.2%
- Pulmonary edema 0.05% 7.6%

**National Benchmarks were obtained from the IOM Report, MEDLINE articles, and Evidence-Based Practice of Anesthesiology
## Practitioner Performance and Clinical Outcomes

### Results:

<table>
<thead>
<tr>
<th>Event</th>
<th>SAC</th>
<th>National Benchmark**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication Errors</td>
<td>0.02%</td>
<td>5.26%</td>
</tr>
<tr>
<td>Difficult Intubations</td>
<td>0.40%</td>
<td>1.2 – 3.8%</td>
</tr>
<tr>
<td>Aspiration</td>
<td>0.02%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Nausea and Vomiting</td>
<td>15.36%</td>
<td>25 – 30%</td>
</tr>
<tr>
<td>Peripheral Nerve Injury</td>
<td>0.01%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Post-Dural Punct HA</td>
<td>0.04%</td>
<td>&lt; 1%</td>
</tr>
</tbody>
</table>

**National Benchmarks were obtained from the IOM Report, MEDLINE articles, and Evidence-Based Practice of Anesthesiology**
Process
MD Performance-Skill/Technical Ability
Hospital Medical Staff Survey
2005, 2007

Anesthesiologists:
Skill or Technical Ability
Mean Score: 3.68

Healthstream Survey-99% Satisfied or Very Satisfied
The February issue of the journal *Anesthesiology* features a new report based on data collected over a three-year period. Findings from the report, *Intraoperative Awareness in a Regional Medical System: A Review of Three Years’ Data*, show that the incidence of intraoperative awareness may be as low as 1 in 14,000 surgeries.

*Pollard, Beck, et.al. Anesthesiology*  
February 2007
Financial Model #1: Post Operative MI

<table>
<thead>
<tr>
<th>Myocardial Infarction</th>
<th># patients</th>
<th>% Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAC</td>
<td>13</td>
<td>0.018%</td>
</tr>
<tr>
<td>National Benchmark*</td>
<td>134.6245</td>
<td>0.19%</td>
</tr>
</tbody>
</table>

Number of patients undergoing anesthesia annually: SAC-70,855 patients/year
US approx. 35 million patients/year.

Average cost to traditional health insurer for first 90 days after heart attack per patient $38,501**
Total SAC patients $539,014
Total National Benchmark $5,183,178

Estimated savings to health plans/patients resulting from SAC reduced events $4,644,164

Estimated national savings if benchmark reduced to SAC benchmark levels $2.3 Billion

*Benchmark Source: Chung, Dorothy and Stevens, Robert, “Evidence-based Practice of Anesthesiology,” page 379.
Financial Model #2: Post-Op Stroke

<table>
<thead>
<tr>
<th>Stroke</th>
<th># patients</th>
<th>% Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAC</td>
<td>14</td>
<td>0.020%</td>
</tr>
<tr>
<td>National Benchmark*</td>
<td>354.275</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Number of patients undergoing anesthesia annually: SAC-70,855 patients/year  US approx. 35 million patients/year.

*Nt’l Avg is <1%, so .5% is used for calculation.

Cost at discharge for inpatient care per patient $9,882**

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<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Total SAC patients</td>
<td>$139,188</td>
</tr>
<tr>
<td>Total National Benchmark</td>
<td>$3,479,689</td>
</tr>
</tbody>
</table>

Estimated savings to health plans/patients resulting from SAC reduced events $3,340,501

Estimated national savings if benchmark reduced to SAC benchmark levels $1.7 Billion

*Benchmark Source: Fleisher, Lee; “Evidence-based Practice of Anesthesiology, page 163.
Financial Modeling

• Considering just two categories, post-operative myocardial infarction and stroke, the potential savings on a national basis approximates $4 Billion/year
In August 2007, Medicare announced it will stop paying for some hospital mistakes as early as 2008. Right now, for example, Medicare pays for more than 60 percent of hospital acquired infections (HAIs).

<table>
<thead>
<tr>
<th>Medicare Hospital Reporting Program</th>
<th>Year 1</th>
<th>Year 2*</th>
<th>Year 3*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Medicare Market Basket</strong> **</td>
<td>$600,000,000</td>
<td>$630,000,000</td>
<td>$661,500,000</td>
</tr>
<tr>
<td>Deduction for Not reporting 2.0%***</td>
<td>$12,000,000 ($3,000,000)</td>
<td>$12,600,000 ($3,150,000)</td>
<td>$13,230,000 ($3,307,500)</td>
</tr>
</tbody>
</table>

*Incorporates a 5% increase each year in Medicare reimbursement.

**Includes total Medicare Reimbursement for Sample hospital network.

*** SCIP Initiatives approximately ¼ overall reporting requirements.
## ROI – Sample Health Plan

### Savings

<table>
<thead>
<tr>
<th>Myocardial Infarction</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td># of patients*</td>
<td>20,000</td>
<td>21,000</td>
<td>22,050</td>
</tr>
<tr>
<td>Benchmark US**</td>
<td>0.19%</td>
<td>0.19%</td>
<td>0.19%</td>
</tr>
<tr>
<td>Total MI at Benchmark</td>
<td>38</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>Average Cost to 1st 90 days post-op***</td>
<td>$38,501</td>
<td>$38,501</td>
<td>$38,501</td>
</tr>
<tr>
<td>Total Cost at Benchmark</td>
<td>$1,463,038</td>
<td>$1,536,190</td>
<td>$1,612,999</td>
</tr>
<tr>
<td>Benchmark SAC Actual</td>
<td>0.02%</td>
<td>0.02%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Total MI at SAC Benchmark</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total MI Cost at SAC Benchmark</td>
<td>$154,004</td>
<td>$161,704</td>
<td>$169,789</td>
</tr>
<tr>
<td>Savings at SAC Benchmark</td>
<td>$1,309,034</td>
<td>$1,374,486</td>
<td>$1,443,210</td>
</tr>
</tbody>
</table>

* Total Inpatient and Outpatient Surgeries at Sample Hospital for Sample Health Plan. A 5% increase is calculated in years 2 and 3.

** Benchmark Source: Chung, Dorothy and Stevens, Robert, “Evidence-based Practice of Anesthesiology,” page 379.

## ROI – Sample Health Plan

### Savings

<table>
<thead>
<tr>
<th>Stroke</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td># of patients*</td>
<td>20,000</td>
<td>21,000</td>
<td>22,050</td>
</tr>
<tr>
<td>Benchmark US**</td>
<td>0.50%</td>
<td>0.50%</td>
<td>0.50%</td>
</tr>
<tr>
<td>Total Stroke at Benchmark</td>
<td>100</td>
<td>105</td>
<td>110</td>
</tr>
<tr>
<td>Average Cost to 1st 90 days post-op***</td>
<td>$9,882</td>
<td>$9,882</td>
<td>$9,882</td>
</tr>
<tr>
<td>Total Cost at Benchmark</td>
<td>$988,200</td>
<td>$1,037,610</td>
<td>$1,089,491</td>
</tr>
<tr>
<td>Benchmark SAC Actual</td>
<td>0.02%</td>
<td>0.02%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Total Stroke at SAC Benchmark</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total Stroke Cost at SAC Benchmark</td>
<td>$39,528</td>
<td>$41,504</td>
<td>$43,580</td>
</tr>
<tr>
<td>Savings at SAC Benchmark</td>
<td>$948,672</td>
<td>$996,106</td>
<td>$1,045,911</td>
</tr>
</tbody>
</table>

*Total Inpatient and Outpatient Surgeries performed at Sample Hospital for Sample Health Plan. A 5% increase is calculated in years 2 and 3.

**Benchmark Source: Fleisher, Lee; "Evidence-based Practice of Anesthesiology, page 163.

## ROI -- Sample Health Plan Savings

**Surgical Site Infection**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong># of patients</strong>*</td>
<td>20,000</td>
<td>21,000</td>
<td>22050</td>
</tr>
<tr>
<td><strong>Benchmark US per CDC</strong></td>
<td>1.90%</td>
<td>1.90%</td>
<td>1.90%</td>
</tr>
<tr>
<td><strong>Total SSI at Benchmark</strong></td>
<td>380</td>
<td>399</td>
<td>419</td>
</tr>
<tr>
<td><strong>Addl Cost of SSI per CDC</strong></td>
<td>$3,152</td>
<td>$3,152</td>
<td>$3,152</td>
</tr>
<tr>
<td><strong>Total Cost of SSI</strong></td>
<td>$1,197,760</td>
<td>$1,257,648</td>
<td>$1,320,530</td>
</tr>
<tr>
<td>% total Antibiotic Administration SAC actual</td>
<td>90%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td><strong>Total # patients getting Antibiotic</strong></td>
<td>342</td>
<td>359</td>
<td>377</td>
</tr>
<tr>
<td>Antibiotic administration decreases SSI by 40-60% per CDC**</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total # patients (decrease in SSI)</strong></td>
<td>137</td>
<td>144</td>
<td>151</td>
</tr>
<tr>
<td><strong>Total Decreased Costs with Antibiotic</strong></td>
<td>$431,193.60</td>
<td>$452,753.28</td>
<td>$475,390.94</td>
</tr>
</tbody>
</table>

*Total Inpatient and Outpatient Surgeries for Sample Hospital. A 5% increase is calculated in years 2 and 3.

**Benchmark and Cost Source: The Centers for Disease Control**
Opportunities for Stakeholders

- Facilitates data driven culture of high performance Customer Service/Clinical Quality/Efficiency
- Guides the organization to best practices/systems approach to healthcare delivery utilizing quantitative real time clinical data with reduction in costly medical errors
- Facilitates patient/customer satisfaction
- Identifies opportunities for Process/Practitioner improvement
- Identifies opportunity for operations efficiency
- Real Time monitoring enhances ability to exceed benchmarks and success in the Realm of P4P
Opportunities For Stakeholders

- Transforms physician practice from episodic to data driven
- Potential Reduction in Malpractice Premiums
- Medical staff-Credentialing/Re-Credentialing-quantitative outcomes
- JCAHO Accreditation—demonstrate competence/compliance with JCAH requirements; re-credentialing data (i.e. moderate sedation)
- CMS Core measures
- Marketing/Branding opportunities