

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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February 28th 2008

What is driving P4P? Catalyst for Change

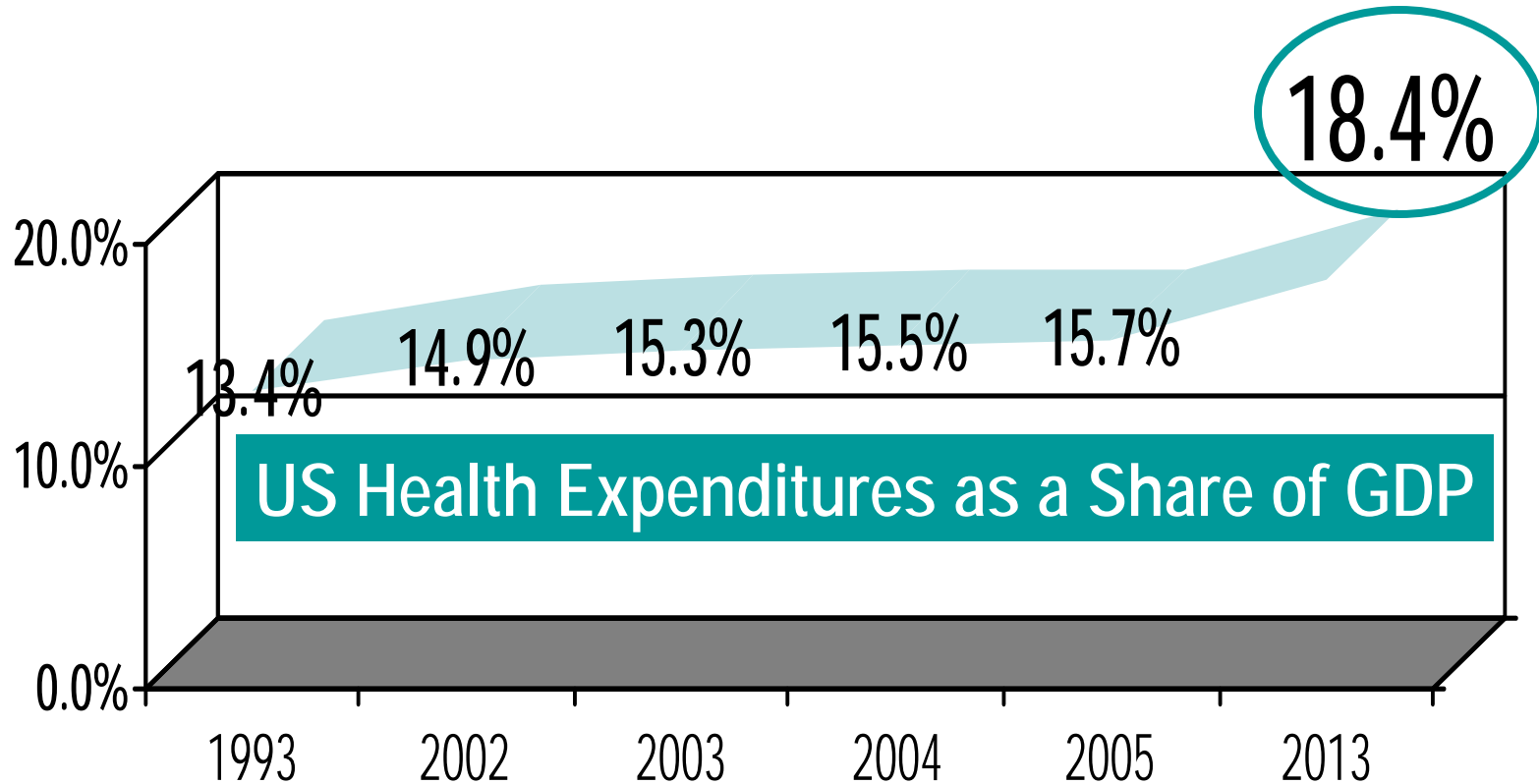
“Numerous studies have highlighted the high rate of medical errors and the need for fundamental changes in the health care delivery system to eliminate gaps in quality. One early catalyst for growth in pay-for-performance was the Institute of Medicine (IOM) report *To Err is Human* in 1999, which estimated 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...”

Source: Accenture, Achieving High Performance in HealthCare: Pay- for- Performance (“Accenture Report”).

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?

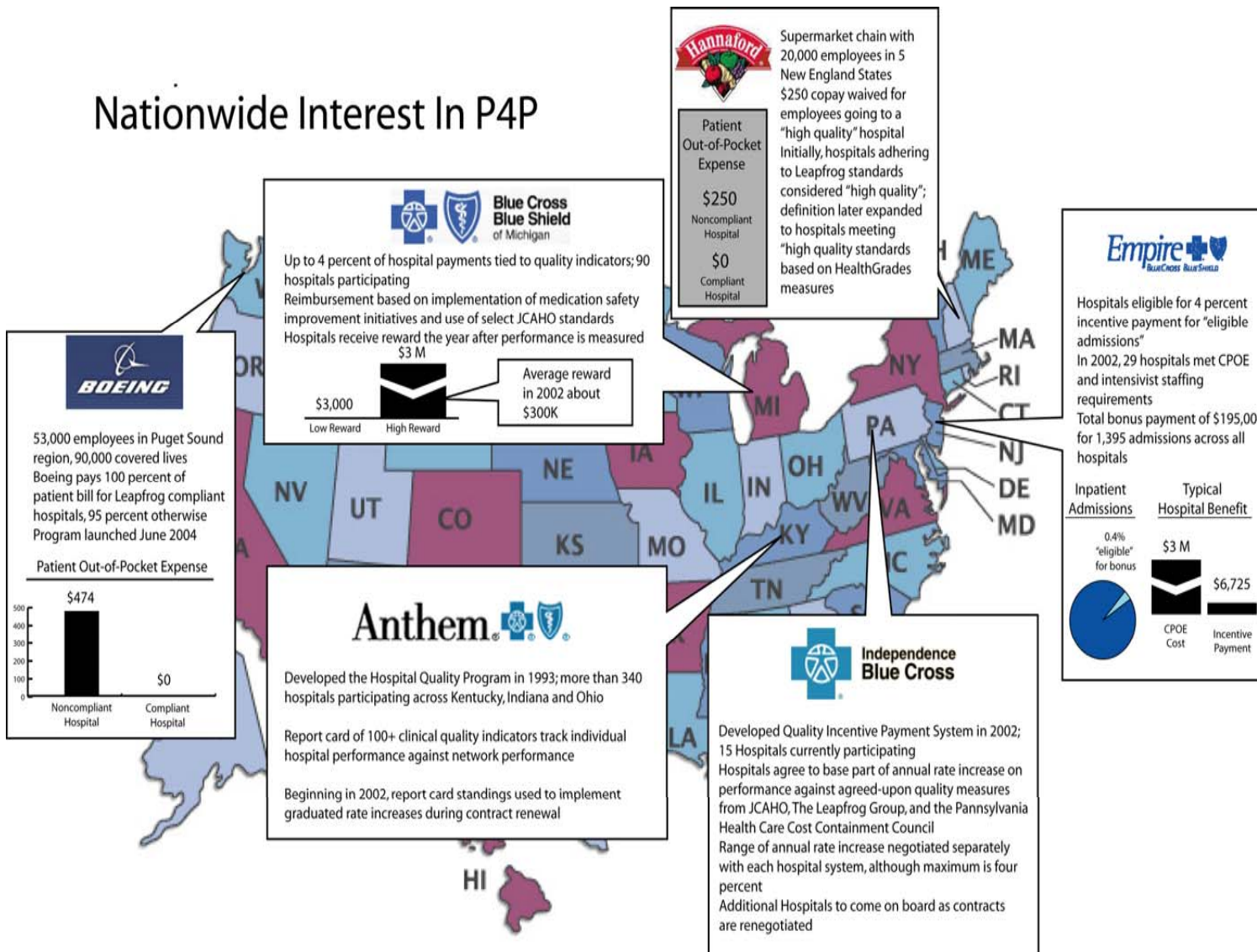


- Healthcare costs are rising rapidly - 2005 Advisory Board Value Gap

*Health Care Advisory Board, Recovering Healthcare Value, 2005, page 24.

Managed Care P4P

Nationwide Interest In P4P



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

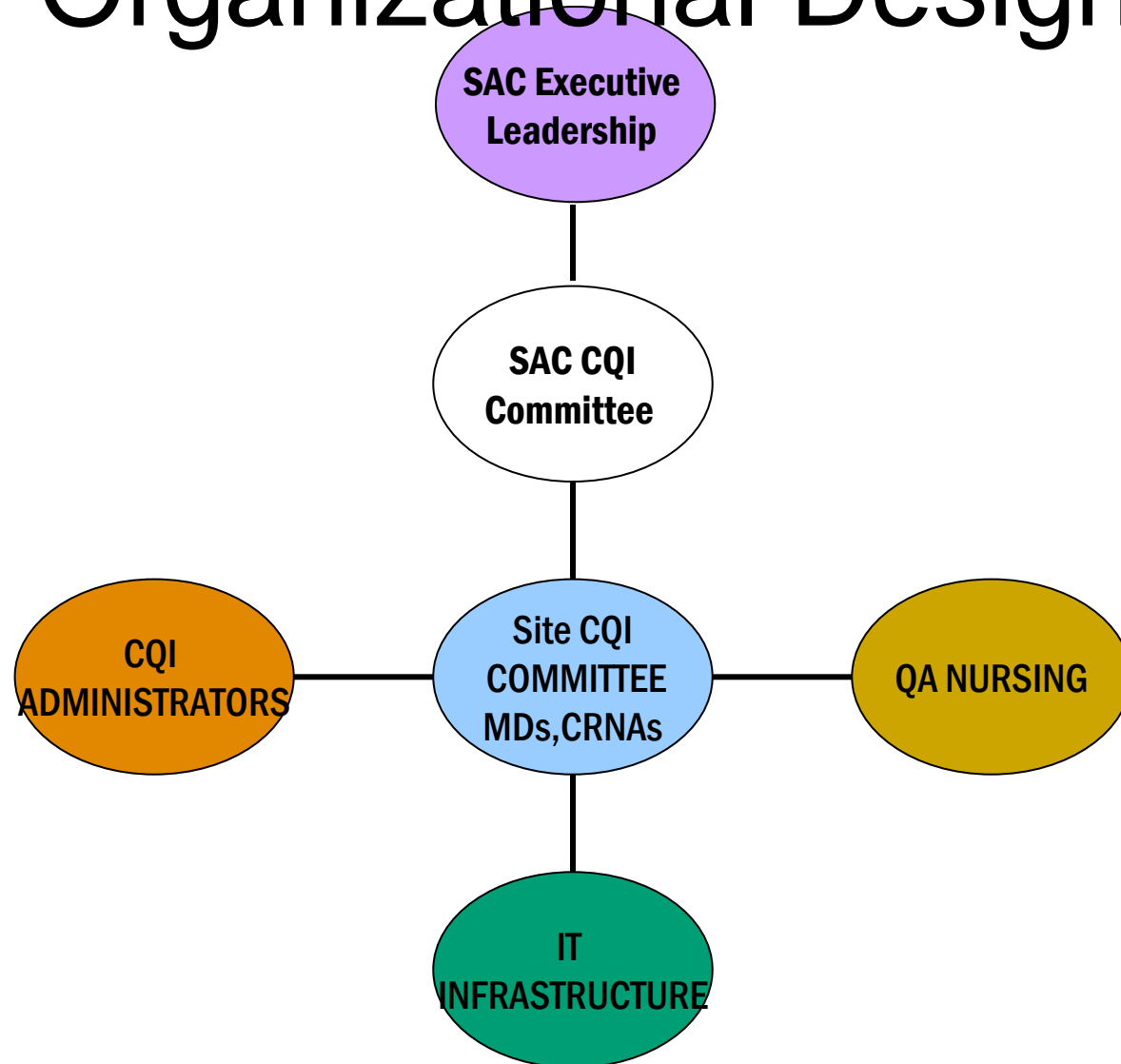
Continuous Feedback Loop

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

Southeast Anesthesiology Consultants CQI System

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

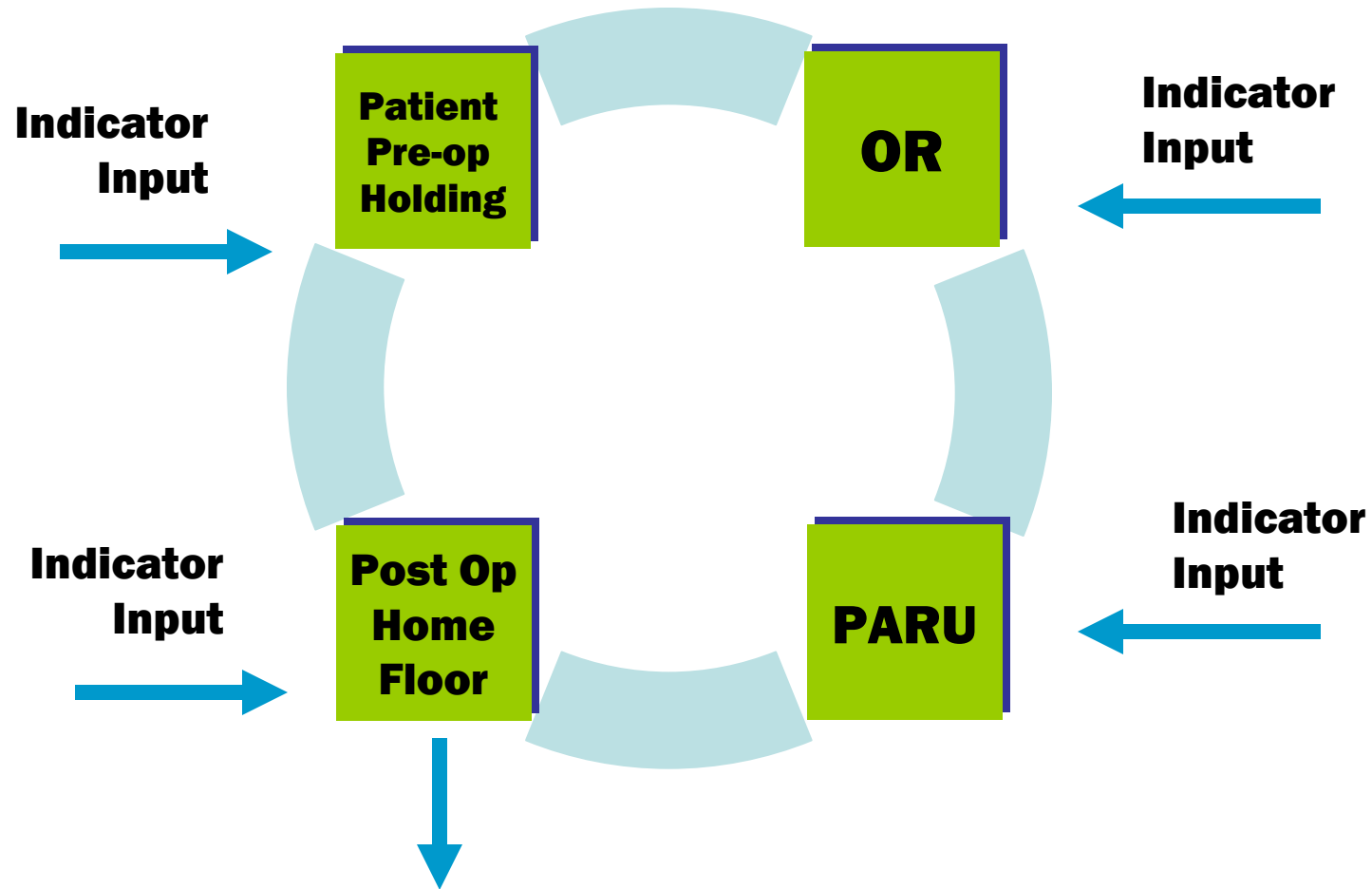
Southeast Anesthesiology

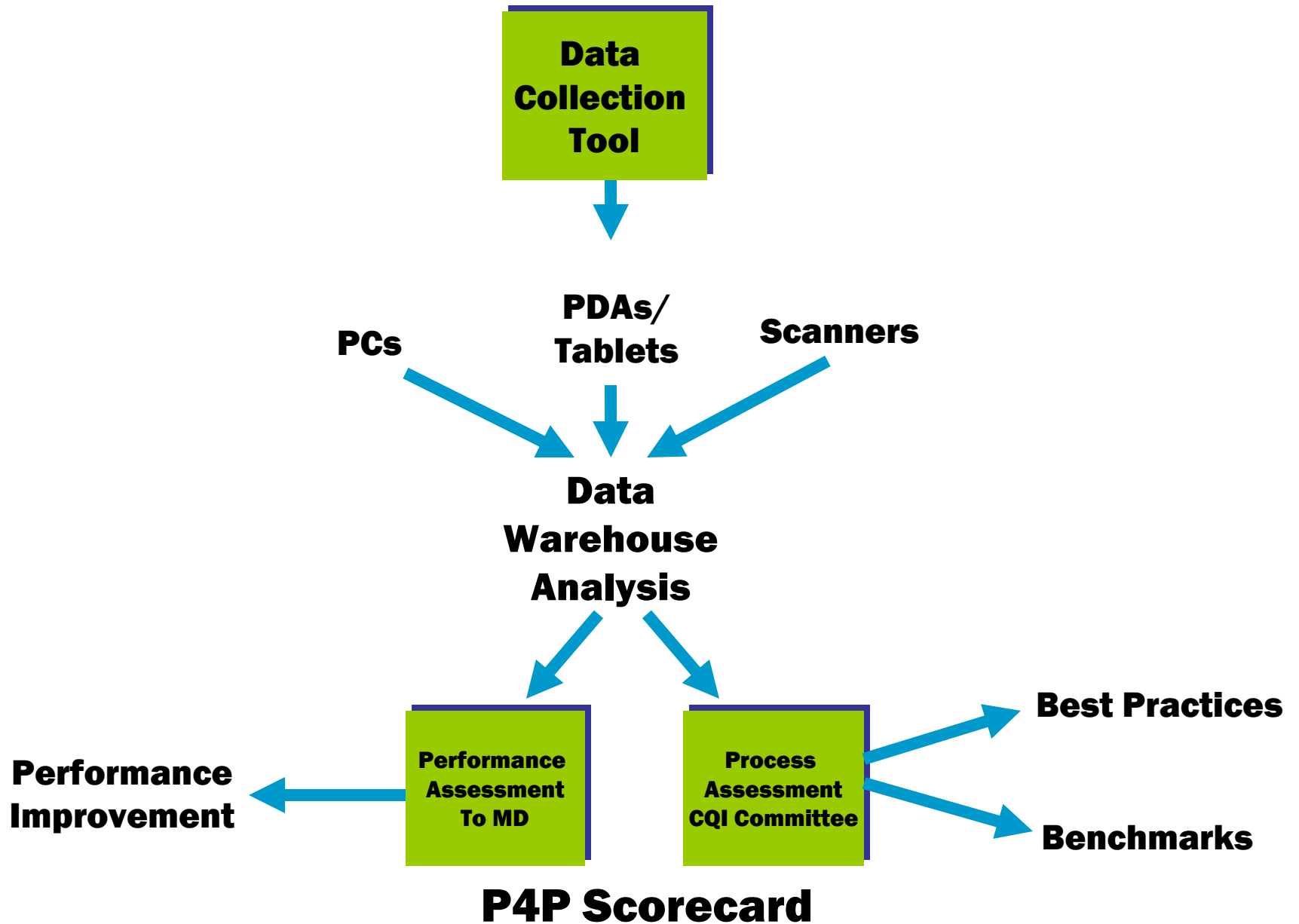
Consultants

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





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

Electronic Clinical Alert

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

- Home
- My Settings
- Notes
- Log Off
- Administrator Users
- User Access Log
- Database Change Log
- Quantum CNS
- Release Version 6.80
- Interactive QA Reports
 - CQI Report
 - Individual Indicator Report
 - Patient Satisfaction Scorecard
 - CQI Summary Report
 - Patient Sat. Summary
 - Anesth. Type Report
 - Credentialing Report
 - QA Forms Received
- Definitions
- Frequently Asked Questions
- Links
- Search Medical Staff
- Search Insurance Providers
- Search Patients
- Patients Not Successful
- Input Returned Success
- Web Input Form
- Release Notes
- Admin/Auditing Tools
 - Administrator Batches
 - Administrator Definitions
 - Administrator FAQ
 - Administrator Links
 - Error Audit Report
 - Error Fix Utilities
- Administrator Question Bank
- Automated Functions
- Administrator Locations
- Administrator Insurance
- Providers
 - PDA Input Form
- Surveys/Mailing List
- Batch Import
- Compliance
- Compliance Video

Anesthesiologist **Surgeon** **CRNA**

[Printer Friendly Version](#)

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Southeast Anesthesiology Consultants, PA
Critical Quality Indicators Summary
John Dow, MD
All Locations for 01/01/2007 - 12/31/2007
All Ages

Critical Quality Indicators Summary - 1112 Patients Evaluated							
Unplanned Case Cancellation Day of Surgery				Case Delay (>15 min. duration of delay)			
Abnormal EKG/ECG	NPO Violation	Anesthesiologist Late	Abnormal Labs	NPO Violation	OR Room Delay	Surgeon Late	Holding Area Delay
0.12%	0.00%	0.25%	0.19%	0.19%	0.31%	2.05%	2.36%
1	0	4	2	2	5	46	30

Provider Performance Indicators - 1112 Patients Evaluated								
Airway/Respiratory System			Cardiovascular	Medication related				
Difficult Intubation	Sleep Apnea *	Dental Damage / Loose	Pump Not Started Protocol Used... *	Prolonged 100% Mask (Completed)	Antagonist Pre-Op (Pre-Op, PAR2)	Medication Error	All Given Within 1 Hour *	
0.50%	90.00%	0.04%	94.59%	0.00%	0.04%	0.00%	74.61%	
0	24	1	70	0	1	0	1204	

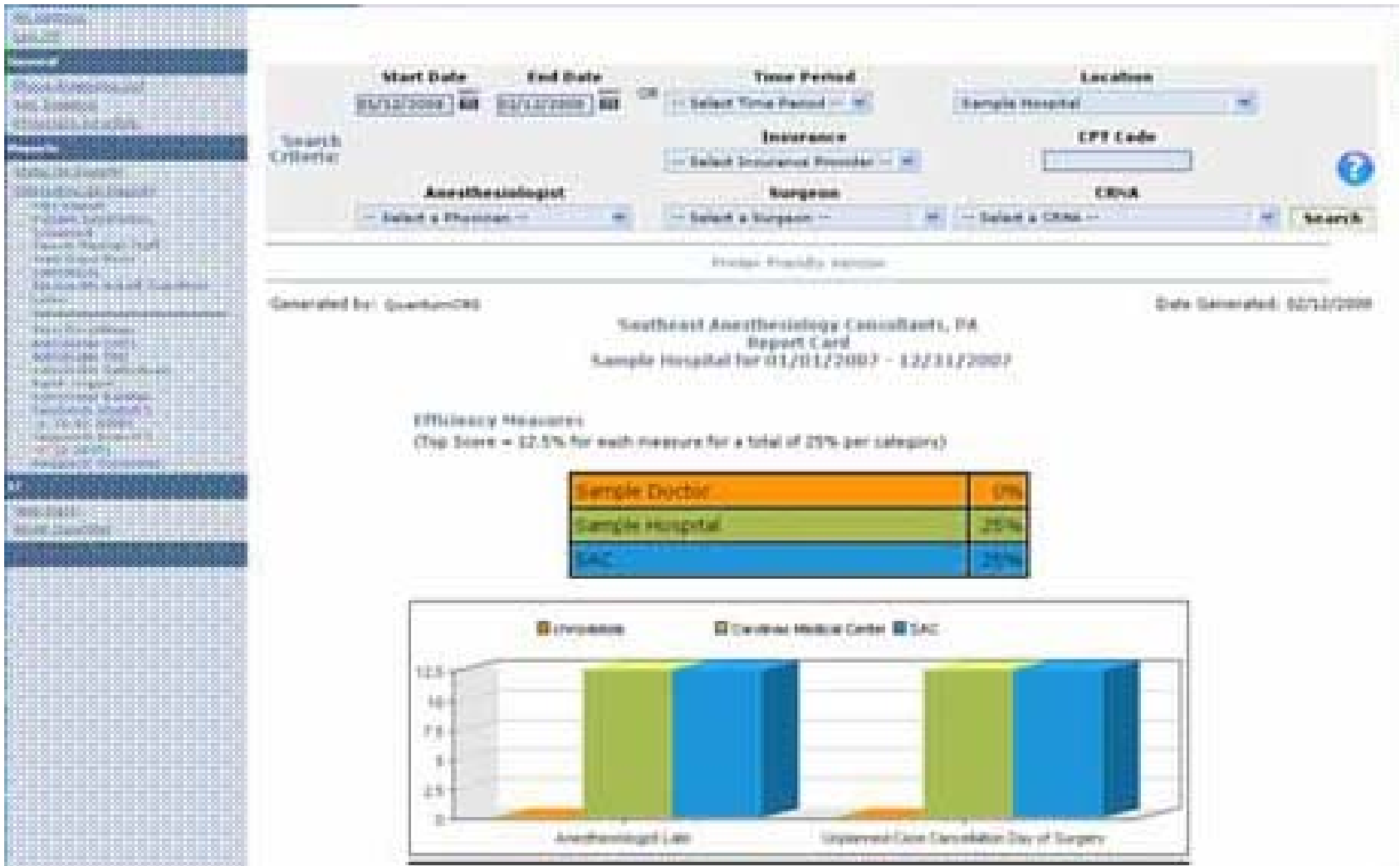
Neurological/Block related					Post-Operative			
Failed Regional	Nerve Injury	Perip Nerve Injury All Reg. Block	High Spinal reg. Intubation/Root Vent	Hot Tag From Epidural	Shaking Pain Control (1-4)	Awareness Under Gen Anesth	Intraop Hypotension *	in/Out: Glucose for 80-200 *
0.00%	0.00%	0.00%	4.00%	0.00%	3.20%	0.00%	95.34%	97.04%
0	0	0	1	0	72	0	1174	28

Other				
Back Injury / Pressure Inj	Eye Injury/ Corneal Abrasion	Verification of Op Site w/Reg Block *	Reg Performed Wrong Side	Pressure Ulcers
0.04%	0.25%	93.95%	0.00%	0.12%
1	0	29	0	2

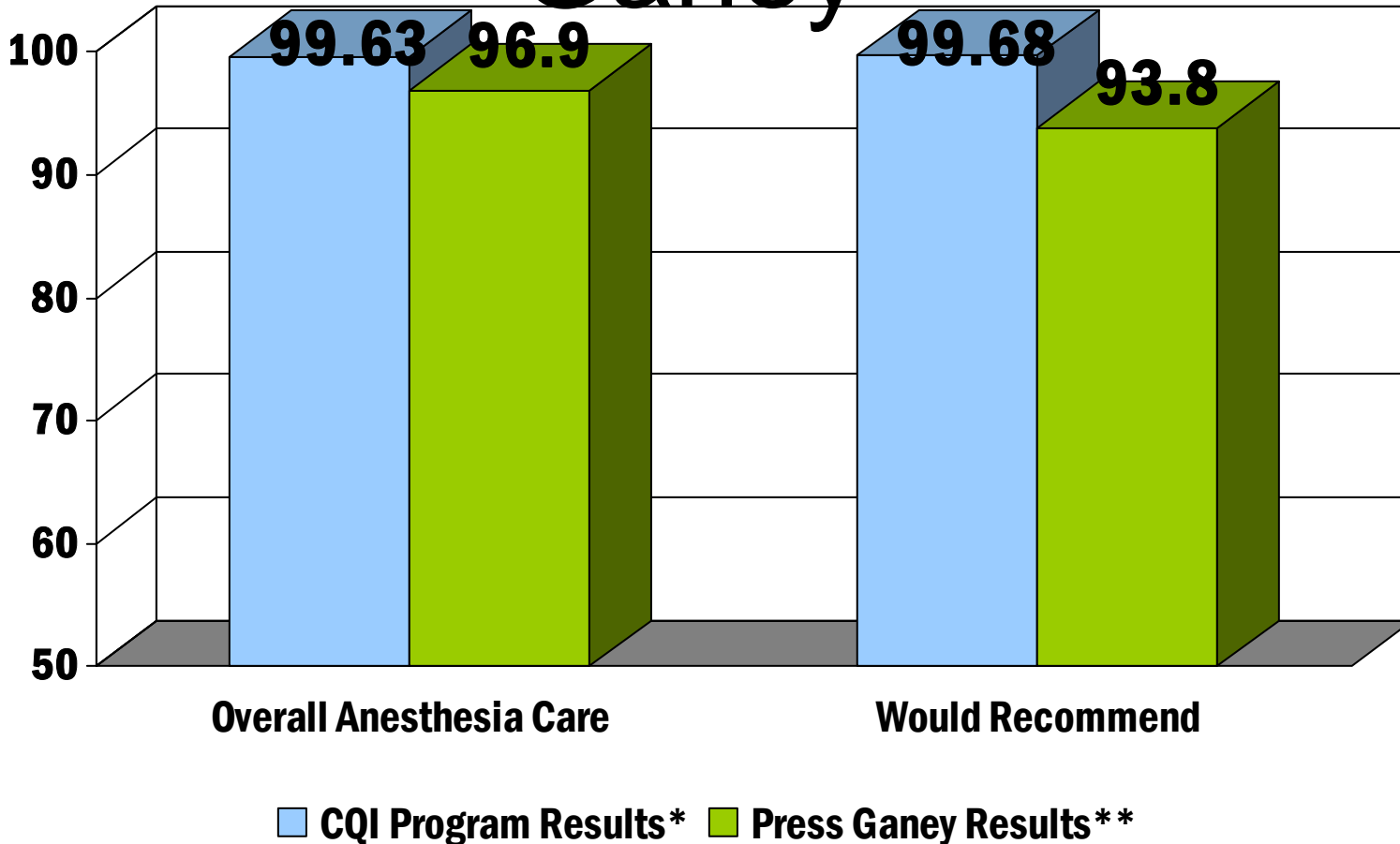
Critical Quality Indicators Summary - 1112 Patients Evaluated											
Death	Airway/Respiratory System							Cardiovascular			
	Aspiration	Pump Bronchospasm	Failed Airway	Laryngospasm	Pump Hypoxemia	Pulmonary Edema	Intubator Induced by	Intra/Post-op Card Arrest	Intra-op/PAR2 BP Changes	ECG Change	MO (In by EKG Labs or MO)
0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	0.12%	0.00%	0.12%	9.40%	0.12%	0.04%
0	1	1	0	1	0	2	0	2	152	2	1

Post-Operative

Practitioner Balanced Scorecard



Patient Satisfaction Results Confirmed by Press Ganey

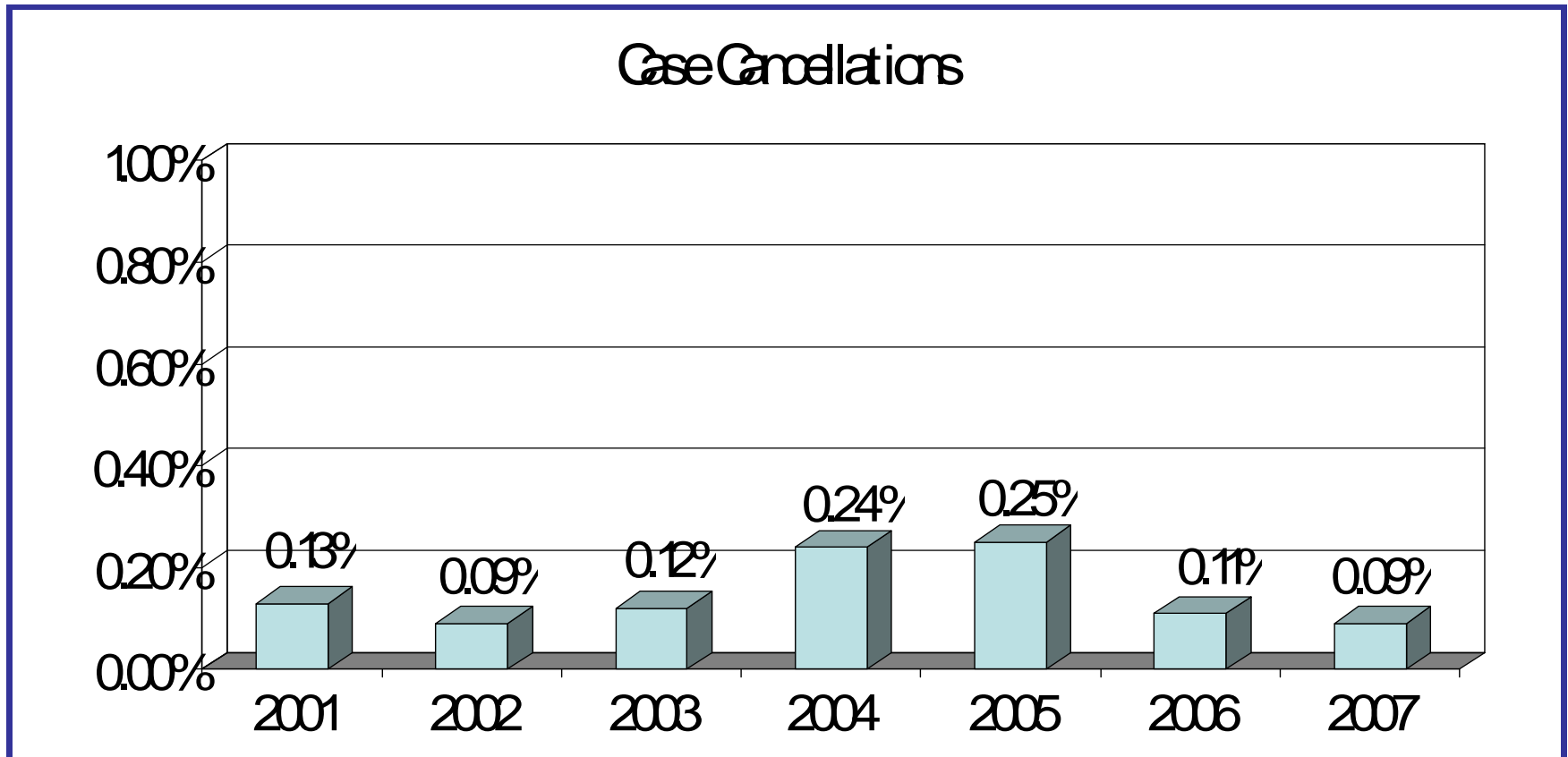


*29,722 patient surveys received. Confidence Level/Interval – CQI Results 99%±.52

**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:	<u>SAC</u>	<u>National Benchmark**</u>
– 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:	SAC	National Benchmark**
– Medication Errors	0.02%	5.26%
– Difficult Intubations	0.40%	1.2 – 3.8%
– Aspiration	0.02%	0.3%
– Nausea and Vomiting	15.36%	25 – 30%
– Peripheral Nerve Injury	0.01%	0.2%
– Post-Dural Punct HA	0.04%	< 1%

**National Benchmarks were obtained from the IOM Report, MEDLINE articles, and Evidence-Based Practice of Anesthesiology

Process

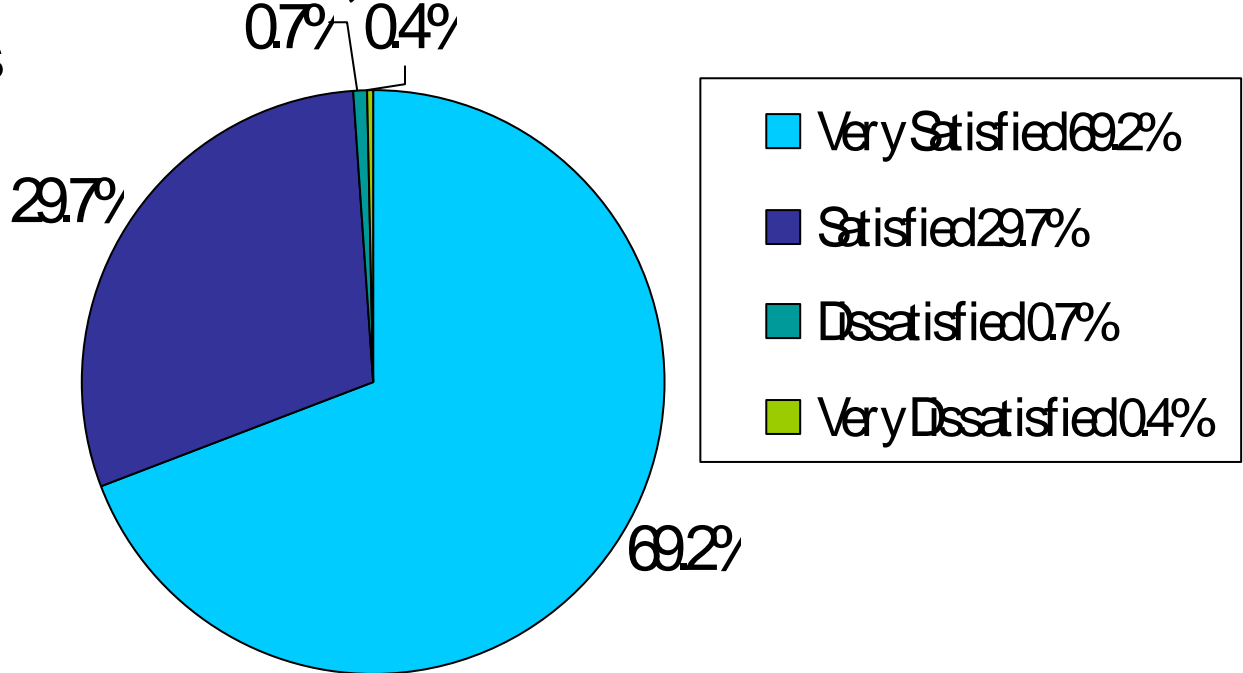
MD Performance-Skill/Technical Ability

Hospital Medical Staff Survey

2005, 2007

Anesthesiologists:

Skill or Technical Ability



Mean Score:

3.68 2005, 2007

Healthstream Survey-99% Satisfied or Very Satisfied

Journal Articles

Anesthesiology

The Journal of the American Society of Anesthesiologists, Inc.



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

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Intraoperative Awareness in a Regional Medical System

A Review of 3 Years' Data

ROBERT J. POLLARD, MD, FRCPC, JOSEPH P. BECK, MD, FRCPC, L. MICHAEL SHAW, MD, FRCPC, G. PHILIP

Background: Intraoperative awareness in patients undergoing general anesthesia is an infrequent but well-documented adverse outcome. The reported incidence of this phenomenon is between 0.1% and 0.3%.

Methods: With institutional review board approval, the authors reviewed continuous quality improvement data from 3 to 5 (CHL-300) at the location where the physician group provided anesthesia. Board-certified anesthesiologists representing certified registered nurse anesthetists in the anesthesia services staff of general anesthesia all anesthesiologists. Data from this review were used in the reporting team's study. Patients were included in the study if they had a general anesthesia as part of their procedure and were enrolled in the continuous improvement program to modify anesthesia practice and were included in this study.

Results: Data from 33,342 patients undergoing anesthesia were included. Of those, the continuous quality improvement program followed up 17,748 (53.2%). Cases were not included in the study if the patient was younger than 18 yr, did not have a general anesthesia, or had a procedure involving the hospital course. By these criteria, a total of 87,361 patients followed by the continuous quality improvement program were at risk for awareness. The patient report incidence of recall was 0.007%.

Conclusion: The incidence of intraoperative awareness in this large sample of patients from a regional medical center undergoing general anesthesia was 0.007%, or 1 per 14,000 patients, substantially less than that reported in the same literature.

The incidence of intraoperative awareness is reported to occur in between 0.1% and 0.3% of cases.¹⁻³ The incidence has not been prospectively confirmed in a large continuous review of patients undergoing a wide range of general anesthesia. Some of the reported studies have been performed in academic centers, we report here the results of a study performed at a major regional health-care system involving data collected over a 3-yr period in a wide variety of patient populations.

The study is based in "The Work in Anesthesiology"⁴ program available at www.anesthesiology.com, page 14.

¹ Incidence of awareness in anesthesia. JAMA. 1991;265:1001-1002.
² Incidence of awareness in anesthesia. Anesthesiology. 1991;75:1001-1002.
³ Incidence of awareness in anesthesia. Anesthesiology. 1991;75:1001-1002.
⁴ The work in anesthesia. JAMA. 1991;265:1001-1002.
⁵ The work in anesthesia. JAMA. 1991;265:1001-1002.
⁶ The work in anesthesia. JAMA. 1991;265:1001-1002.
⁷ The work in anesthesia. JAMA. 1991;265:1001-1002.
⁸ The work in anesthesia. JAMA. 1991;265:1001-1002.
⁹ The work in anesthesia. JAMA. 1991;265:1001-1002.
¹⁰ The work in anesthesia. JAMA. 1991;265:1001-1002.

Financial Model #1: Post Operative MI

<u>Myocardial Infarction</u>	<u># patients</u>	<u>% Patients</u>
SAC	13	0.018%
National Benchmark*	134.6245	0.19%

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.

** Cost Source: NBER Working Paper No. 6514, nber.org/digest/Oct 98, National Bureau of Economic Research.

Financial Model #2: Post-Op Stroke

<i>Stroke</i>	# patients	% Patients
SAC	14	0.020%
National Benchmark*	354.275	0.5%

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

**Ntl Avg is <1%, so .5% is used for calculation.*

Cost at discharge for inpatient care per patient \$	9,882**
Total SAC patients	\$ 139,188
Total National Benchmark	\$3,479,689

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.

**Cost Source: Neurology, Vol 46, Issue 3, 854-860, 1996, American Academy of Neurology, "Inpatient costs of specific cerebrovascular events at five academic medical centers"

Financial Modeling

- Considering just two categories, post-operative myocardial infarction and stroke, the potential savings on a national basis approximates

\$4 Billion/year

Return on Investment

No Reduction in Medicare Basket

Medicare Hospital Reporting Program	Year 1	Year 2*	Year 3*
Total Medicare Market Basket**	\$600,000,000	\$630,000,000	\$661,500,000
Deduction for Not reporting 2.0%***	\$12,000,000 (\$3,000,000)	\$12,600,000 (\$3,150,000)	\$13,230,000 (\$3,307,500)
<p><i>*Incorporates a 5% increase each year in Medicare reimbursement.</i></p> <p><i>**Includes total Medicare Reimbursement for Sample hospital network.</i></p> <p><i>*** SCIP Initiatives approximately ¼ overall reporting requirements.</i></p>			

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).

ROI – Sample Health Plan

Savings

Myocardial Infarction

Myocardial Infarction	Year 1	Year 2	Year 3
# of patients*	20,000	21,000	22,050
Benchmark US**	0.19%	0.19%	0.19%
Total MI at Benchmark	38	40	42
Average Cost to 1st 90 days post-op***	\$ 38,501	\$ 38,501	\$ 38,501
Total Cost at Benchmark	\$ 1,463,038	\$ 1,536,190	1,612,999
Benchmark SAC Actual	0.02%	0.02%	0.02%
Total MI at SAC Benchmark	4	4	4
Total MI Cost at SAC Benchmark	\$ 154,004	\$ 161,704	\$ 169,789
Savings at SAC Benchmark	\$ 1,309,034	\$ 1,374,486	\$ 1,443,210
* 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.			
*** Cost Source: NBER Working Paper No. 6514, nber.org/digest/Oct 98, National Bureau of Economic Research.			

Savings Stroke

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

* 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.

*** Cost Source: Neurology, Vol 46, Issue 3, 854-860, 1996, American Academy of Neurology, "Inpatient costs of specific cerebrovascular events at five academic medical centers"

Savings

Surgical Site Infection

Surgical Site Infection	Year 1	Year 2	Year 3
# of patients*	20,000	21,000	22050
Benchmark US per CDC**	1.90%	1.90%	1.90%
Total SSI at Benchmark	380	399	419
Addl Cost of SSI per CDC**	\$3,152	\$3,152	\$3,152
Total Cost of SSI	\$ 1,197,760	\$ 1,257,648	\$ 1,320,530
% total Antibiotic Administration SAC actual	90%	90%	90%
Total # patients getting Antibiotic	342	359	377
Antibiotic administration decreases SSI by 40-60% per CDC**	40%	40%	40%
Total # patients (decrease in SSI)	137	144	151
Total Decreased Costs with Antibiotic	\$431,193.60	\$452,753.28	\$475,390.94
<p><i>*Total Inpatient and Outpatient Surgeries for Sample Hospital. A 5% increase is calculated in years 2 and 3.</i></p> <p>**Benchmark and Cost Source: The Centers for Disease Control</p>			

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