Measuring Outcome after Ambulatory Surgery in 2015

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Disclosures

Project Manager (unpaid) for SAMBA Clinical Outcomes Registry (SCOR!)

Partners eCare is the organization planning the Epic implementation at Partners
Learning Objectives

At the conclusion of this activity, participants should be able to:

• Explain the utility of existing perioperative registry projects
• Understand the concept of Qualified Clinical Data Registry (QCDR) reporting
• Describe available outcome measures after ambulatory anesthesia
• Discuss the patient perspective on quality
Overview

- Mechanics and limitations of registry projects
- Status of anesthesia registries
- Quality in ambulatory anesthesia
  - From the literature
  - Data from the SAMBA Clinical Outcomes Registry
- Patient-centered outcomes in ambulatory anesthesia
Definitions:

- A registry is a cohort of patients who share a common characteristic, and related data elements which may include comorbidities, process, and outcome data.

- Registries can be organized around chronic diseases (e.g. diabetes), procedures (cardiac surgery), or devices (pacemaker).

- Registries can be through an external organization (professional or regulatory) or within the internal record.
Clinical Outcome Registries

- Find areas for focused improvement
- Identify and disseminate best practices
- Identify rare serious adverse events
- Meet regulatory and payer requirements
- Help to define appropriate quality indicators
- Show value
A Comparison of Clinical Registry Versus Administrative Claims Data for Reporting of 30-Day Surgical Complications

Elise H. Lawson, MD, MSHS,* Rachel Louie, MS,* David S. Zingmond, MD, PhD,* Robert H. Brook, MD, ScD,*†‡ Bruce L. Hall, MD, PhD, MBA,§|| Lein Han, PhD,¶ Michael Rapp, MD, JD,¶# and Clifford Y. Ko, MD, MSHS*§**

• Compared 30-day postoperative complications between NSQIP and Medicare claims data
  • SSI, UTI, VTE, pneumonia, sepsis, MI
• In 117,752 patients from > 200 hospitals
• Excellent agreement for postoperative mortality
• Agreement beyond chance on the recording of complications was poor to moderate
• Addition of outpatient to inpatient Medicare claims data improved sensitivity but also false positives
Clinical Outcomes Registries

• Models:
  • Collect denominator data via billing systems; detailed info on sample of cases and/or serious adverse events
  • Consolidate available data on every case
  • Specified dataset for every case

• Data can define:
  • Routine outcomes – best practice
  • Rare, serious adverse events
Analysis of rare / serious adverse events

- SPA’s Wake-up Safe – medication error, hyperkalemic arrest
- Pediatric Cardiac Arrest Registry (POCA) – identified the phenomenon of halothane cardiac arrest
- Closed claims – MAC respiratory events and fire risk
- Plastic surgery – VTE in abdominoplasty
Registry Challenges

- What to measure and how
- Standardizing terminology and definitions
- Getting data out of electronic systems
- Post-discharge and longer-term follow-up
- How do we get the patient’s perspective?
Anesthesia Registry Projects

- Multicenter Perioperative Outcomes Group (MPOG)
- Anesthesia Quality Institute (AQI): NACOR
- Society for Ambulatory Anesthesia (SAMBA): SCOR
- Society for Pediatric Anesthesia (SPA): Wake up Safe, Pediatric Regional Anesthesia Network (PRAN)
• Academic consortium to improve patient care using data
• 47 centers with commercially available AIMS systems
• Over 2 million cases from 15 centers
• Research reports on:
  • Unanticipated difficult airway, predictors of difficult intubation
  • Epidural hematoma
  • Trends on transfusion, intraoperative tidal volume
• QCDR reporting through ASPIRE project
A non-profit corporation; funded initially by ASA

All electronic data capture (de-identified data)

- Billing data from all
- Automated record data from some
- 384 practices contributing
- 3098 facilities
- 16,000 anesthesiologists  12,500 CRNA  5000 resident/SRNA/other

- 20.4M cases – 4M with clinical outcomes data
- 65% of cases are ambulatory
Operational Data: Tonsillectomy Times by Facility
PQRS uses a combination of incentive payments and payment adjustments to promote reporting of quality information.

A QCDR is a CMS-approved entity (such as a registry, certification board, etc) that collects clinical data to foster improvement in quality of care.

Different from a qualified registry in that it is not limited to measures within PQRS.
There is also a new requirement in 2014 that the quality measures selected must cover at least 3 of the 6 available domains, which represent HHS’ NQS priorities for health care quality improvement.

The 6 NQS domains are:
1. Patient and Family Engagement
2. Patient Safety
3. Care Coordination
4. Population/Public Health
5. Efficient Use of Healthcare Resources
6. Clinical Process/Effectiveness
AQI: Non-PQRS QCDR Measures

- Post-anesthesia transfer of care – use of checklist or protocol
- Prevention of PONV – combination therapy (adults or peds)
- Composite anesthesia safety
- Rates of immediate perioperative cardiac arrest and mortality
- Rate of PACU re-intubation
- Short-term pain management
- Composite procedural safety for central line placement
- Composite patient experience measure (CAHPS-S or equivalent)

Bold = Person and Caregiver-Centered Experience and Outcomes
ASPIRE will expand the existing mature Michigan Surgical Quality Collaborative (MSQC) and Multicenter Perioperative Outcomes Group (MPOG) processes and relationships to improve anesthesia processes of care by collecting, analyzing, and reporting on anesthesiology process of care and outcome data.

ASPIRE will collect anesthesia provider, process of care, and outcome data using cost-effective automated electronic health record interfaces.

By measuring, reporting, and decreasing variation in six specific anesthesia practices (anesthesia technique, hemodynamic management, intraoperative ventilation, neuromuscular blockade, fluid balance, and depth of anesthesia), we will decrease the incidence of postoperative complications and costs.
ASPIRE 2014 Performance Measures

- **INF 01** - % cases that receive antibiotics within 60 mins of incision
- **NMB 01** - % cases receiving a non-depolarizing neuromuscular blocker that have a TOF monitor documented
- **NMB 02** - % cases receiving a non-depolarizing neuromuscular blockade medication with administration of neostigmine if time from last non-depolarizer administration to extubation is < 4 hours
- **GLU 01** - % cases with perioperative glucose > 200 (between anesthesia start-2 hours and anesthesia end) administration of an insulin bolus or infusion or glucose test recheck
- **GLU 02** - % cases with glucose < 60 (between anesthesia start-2 hours and anesthesia end) with a glucose test recheck or administration of dextrose containing solution (between anesthesia start and anesthesia end + 2 hours)
- **PUL 01** - % cases with median tidal volumes less than 10 ml/kg
Outcomes in Ambulatory Anesthesia
Quality in Ambulatory Anesthesia

- What to measure? (What can we measure?)
  - Efficiency
  - Outcomes – Admission? PONV/pain? Serious events?
  - Patient satisfaction
- Importance
  - CMS mandate for “value-based purchasing” in ASCs due to large volume and $$ cost of Medicare beneficiaries
  - NSQIP – although morbidity and mortality is lower, burden is high because of volume
Ambulatory Outcome Data: Sources

- Prospective clinical studies
- Descriptive series – large populations, or “proof of concept”
- Administrative data
- Registry data
ASC Quality Metrics

- Patient fall or burn
- Hospital transfer/admission
- Wrong site, side, patient, procedure, implant
- Appropriate surgical site hair removal
- Antibiotic timing; surgical site infection
- Medication reconciliation; medication administration variance
- VTE measures: outcome, assessment, prophylaxis
National Survey of Ambulatory Surgery (NSAS)

- Conducted by National Center for Health Statistics every decade (most recent 2006)
- Summarizes case volume, duration, location, demographics
- Secondary analyses for ambulatory surgery:
  - Short term outcomes and readmission in pedi ENT
  - Demographics for laryngopharyngeal and sinus surgery
  - Patient selection and location of care issues for morbid obesity
  - Use of regional anesthesia in pediatric orthopedic surgery
Nationwide use and outcomes of ambulatory surgery in morbidly obese patients in the United States

Eric B. Rosero MD, MSc (Assistant Professor of Anesthesiology), Girish P. Joshi MBBS, MD, FFARCSI (Professor of Anesthesiology)

- Assessed risk in propensity-matched cohort of obese and non-obese patients from NSAS
- Morbid obesity = 0.32% of ambulatory procedures
  - Majority of these were in HOPD rather than F-ASC
- Morbidly obese were younger but had more comorbidities
- Procedures were significantly shorter in obese
- Incidence of hyper/hypotension, hypoxia, cancellation, admission, and delayed discharge did not differ
Healthcare Cost and Utilization Project

- Fox et al: Surgery 2014; 155:743
- Studied ASC procedures in over 3 million patients in 3 states (2008-2009)
- Hospital transfer at discharge = 1.1 per 1000
- ED visit or hospital admission within 7 days = 31.8 per 1000 discharges
- Little variation in adjusted hospital transfer rate but substantial variation in hospital based acute care rates after discharge – which is a more meaningful measure of quality?
National Surgical Quality Improvement Project (NSQIP)

- Abstraction process; case mix based on severity
- Give centers expected vs observed results
- Recent publications related to ambulatory outcomes
  - Lower short-term complication rate in lumbar discectomy (Pugely, Spine 2013, 38: 263)
  - Comorbidity related risk in thyroid surgery (Abraham, JACS 2014, 218:1231)
  - Safety of laparoscopic cholecystectomy in the elderly (Rao, JACS 2013, 217: 1038)
Patient Selection for Day Case-eligible Surgery

Identifying Those at High Risk for Major Complications

Anesthesiology 2013; 119: 1310

Michael R. Mathis, M.D.*, Norah N. Naughton, M.D., M.B.A.,† Amy M. Shanks, M.S.,‡ Robert E. Freundlich, M.D., M.S.,* Christopher J. Pannucci, M.D., M.S.,§ YiJia Chu, M.D.*, Jason Haus, M.D.,* Michelle Morris, M.S.,‡ Sachin Kheterpal, M.D., M.B.A.||

- Review of NSQIP – 250,000 cases commonly done as outpatient
- Early perioperative morbidity or mortality = 0.1%
- Unplanned admission = 1.1%

Independent risk factors (controlling for surgical complexity):
- BMI (overweight or obese)
- COPD
- Cardiovascular: hx TIA/stroke, HTN, prior cardiac surgery
- Prolonged operative time
Development and Testing of Tools to Detect Ambulatory Surgical Adverse Events

Hillary J. Mull, PhD, MPP,*† Ann M. Borzecki, MD, MPH,‡‡¶ Kathleen Hickson, PhD, RN,‡§ Kamal M.F. Itani, MD,¶¶** and Amy K. Rosen, PhD*†

TABLE 1. Administrative Data-Based Ambulatory Surgery Triggers Proposed for Further Testing in the VA Boston HCS*

<table>
<thead>
<tr>
<th>Trigger Name</th>
<th>Trigger Rule Applied to Patient-Level Data</th>
<th>Clinical Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Department (ED)</td>
<td>Ambulatory surgery and subsequent ED visit ≤21 d</td>
<td>ED visits within 21 d of an ambulatory surgery are likely to include visits because of complications of surgery.</td>
</tr>
<tr>
<td>Admission</td>
<td>Ambulatory surgery and admission to hospital ≤30 d</td>
<td>Hospital admissions within 30 d of an ambulatory surgery may be due to complications from surgery.</td>
</tr>
<tr>
<td>Length of stay (LOS)</td>
<td>Ambulatory surgery and same day admission with length of stay &gt;24 h</td>
<td>Patients with an ambulatory surgery that are hospitalized on the same day have a higher probability of complications.</td>
</tr>
<tr>
<td>Procedure</td>
<td>Ambulatory surgery and procedure (interventional radiological or urological or cardiac or gastroenterological) or reoperation ≤30 d</td>
<td>Reoperation and certain procedures within 30 d of a scheduled ambulatory surgery are indicative that a complication may have occurred.</td>
</tr>
<tr>
<td>Clinic*</td>
<td>Occurrence of ≥2 postoperative clinic visit within 30 d from surgical procedure</td>
<td>Multiple visits to a clinical specialist related to surgery indicate a complication may have occurred.</td>
</tr>
</tbody>
</table>
Routine Outcomes: SAMBA Clinical Outcomes Registry

- HIPAA compliant; prospective, per-case data
  - Basic demographics and comorbidities; anesthetic technique
  - Outcomes, including post-discharge follow-up
- Focus on pain, PONV, patient satisfaction
  - Provide centers with their own results, plus benchmarks
  - Identify any patterns of rare serious adverse events
SCOR ID: WEHD1100009

Note: Form can be edited after section is submitted.

Basic Info

Cancellation day of surgery
Surgeon
Primary procedure (CPT):
Planned length of stay:
Location:
Care Model:

Delete this patient  Save & Exit  Save & Go to next section  Exit without saving
SCOR

- Current N = 148,133
- Most frequent cases: 3 of top 4 are the same as in NACOR ambulatory cases

<table>
<thead>
<tr>
<th>SCOR</th>
<th>NACOR (outpatient cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens and cataract procedures</td>
<td>Colonoscopy and biopsy</td>
</tr>
<tr>
<td>Colonoscopy and biopsy</td>
<td>Lens and cataract procedures</td>
</tr>
<tr>
<td>Oral and dental services</td>
<td>Upper GI endoscopy with biopsy</td>
</tr>
<tr>
<td>Other therapeutic procedures on muscles</td>
<td>Other therapeutic procedures on</td>
</tr>
<tr>
<td>and tendons</td>
<td>muscles and tendons</td>
</tr>
</tbody>
</table>
SCOR profile – case type

- Ophthalmology: 26%
- Orthopedics: 19%
- GI: 13%
- Gynecology: 7%
- Neurosurgery/pain: 4%
- General surgery/oncology: 5%
- ENT: 4%
- Dental/Oral surgery: 8%
- Vascular: 0%
- Anesthesia: 1%
- Plastic surgery/dermatology: 7%
- Other: 0%
Some findings from SCOR

- PONV and PDNV vary significantly by procedure, but also by center and provider.

- PONV guidelines aren’t followed a surprising amount of the time.
SCOR Patient Focused Outcomes: PONV

- GYN cases have a high incidence of PONV and PDNV
- There is significant variability between providers and between centers
- Basic PONV guidelines are not followed a surprising amount of time
- In hysteroscopy patients, even for patients with PONV scores of 3 and 4, only 32% of patients received > 1 antiemetic. 21% of those with PONV score of 3 were not given an antiemetic.
## SCOR Results: PONV by procedure

<table>
<thead>
<tr>
<th>Antiemetic Rescue in PACU</th>
<th>Nausea post-discharge</th>
<th>Vomiting post-discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Mastectomy</td>
<td>16%</td>
<td>13%</td>
</tr>
<tr>
<td>Hysteroscopic ablation</td>
<td>5%</td>
<td>12%</td>
</tr>
<tr>
<td>Tonsillectomy</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>Lap chole</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>Knee arthroscopy</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Cataract</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>
SCOR Patient Focused Outcomes: Pain

- Patients with peripheral nerve blocks for knee surgery have better pain control in the PACU, but poorer pain control and higher PONV after discharge.

- Attention to transition from regional anesthesia appears to be important in providing optimal outcomes.

- Significant variation by practice and by provider.
Patient-centered Outcomes
SCOR Patient Satisfaction

- Using any number from 0 to 10, where 0 is the worst possible and 10 is the best possible, what number would you use to rate this facility during your stay?

- Overall, 97% of patients rate facility either 9 or 10
AQI-affiliated anesthesia satisfaction survey

- Poster 2014 ASA showed results of 152,260 cases in 6 practices using an anesthesia-focused patient satisfaction survey
- Patients were surveyed within a few days of anesthesia, using text, then email, then automated phone systems.
- Response rate = 25%
- Practices that used the tool and provided immediate feedback to their staff saw steady improvement in satisfaction.
- 43% improvement in 6 months
Development of the Functional Recovery Index for Ambulatory Surgery and Anesthesia

Jean Wong, M.D., F.R.C.P.C.,* Doris Tong, M.D., F.R.C.P.C.,* Yoshani De Silva, B.Sc.,† Amir Abrishami, M.D.,† Frances Chung, M.D., F.R.C.P.C.§

• Developed to assess functional recovery after discharge from ambulatory surgery

<table>
<thead>
<tr>
<th>Factor</th>
<th>Number of Items</th>
<th>Number of Levels</th>
<th>Meaning of Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Pain and social activity</td>
<td>7</td>
<td>0–10</td>
<td>Performs normal social activities without interference due to pain or physical or emotional problems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Frequent interference with normal social activities due to pain or physical or emotional problems</td>
</tr>
<tr>
<td>2: Lower limb activities</td>
<td>4</td>
<td>0–10</td>
<td>Performs lower limb activities without difficulty</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Performs lower limb activities with limitations</td>
</tr>
<tr>
<td>3: General physical activity</td>
<td>3</td>
<td>0–10</td>
<td>Performs general physical activities without difficulty</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Performs general physical activities with limitations</td>
</tr>
</tbody>
</table>
Development and Feasibility of a Scale to Assess Postoperative Recovery

The Post-operative Quality Recovery Scale


- Tracks multiple domains of recovery in intermediate to long-term time frame
- 6 domains:
  - Physiologic
  - Nociceptive
  - Emotive
  - Activities of daily living
  - Cognitive
  - Overall patient perspective
A 15-question version of (QoR-40) was tested in 127 adult surgical patients.

The short version performed well in all dimensions and took only about 2.5 min to complete.
### PART A

How have you been feeling in the last 24 hours?

(0 to 10, where: 0 = none of the time [poor] and 10 = all of the time [excellent])

<p>| | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Able to breathe easily</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2.</td>
<td>Been able to enjoy food</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3.</td>
<td>Feeling rested</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>Have had a good sleep</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5.</td>
<td>Able to look after personal toilet and hygiene unaided</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6.</td>
<td>Able to communicate with family or friends</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7.</td>
<td>Getting support from hospital doctors and nurses</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8.</td>
<td>Able to return to work or usual home activities</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9.</td>
<td>Feeling comfortable and in control</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>10.</td>
<td>Having a feeling of general well-being</td>
<td>None of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
**QoR-15 Patient Survey**

**PART B**

*Have you had any of the following in the last 24 hours?*

(10 to 0, where: 10 = none of the time [excellent] and 0 = all of the time [poor])

<table>
<thead>
<tr>
<th>Question</th>
<th>None of the time</th>
<th>Of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Moderate pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Severe pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Nausea or vomiting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Feeling worried or anxious</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Feeling sad or depressed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusions

- Registries offer us the opportunity to understand our individual results, define and reproduce best practice, and develop meaningful quality indicators.

- External registries offer the opportunity to benchmark against other groups, and to learn about patterns of serious adverse events.

- Increasingly, we will be asked to consider the patient’s focus in measuring outcomes.