Implementing Perioperative IT? Don’t Forget Key Components
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Conflict of Interest

Christine A. Doyle, MD

- Advisory Board: Surgical Information Systems
- President and Partner: Coast Anesthesia Medical Group
- Speaker of the House, California Society of Anesthesiologists
- Past Chair, Committee on Electronic Media and Information Technology, American Society of Anesthesiologists
Learning Objectives

• Outline the specific steps to take prior to design and implementation of technology to best manage change and improve workflow processes

• Describe the barriers to successful implementation of a perioperative system and the strategies to overcome these challenges

• Identify the benefits of including an anesthesiology information management system as a foundation for an integrated perioperative system

• Discuss the importance of ongoing process improvement supported by data analytics
Agenda

- Workflow & Planning
- Barriers to Implementation
- Benefits Specific to AIMS
- Process Improvement
Multiple Values for Perioperative HIT
About Coast Anesthesia and O’Connor Hospital

- 358 bed community hospital, in Silicon Valley, part of Verity Healthcare
- 11 Operating Rooms, 2 Endo Suites, 2 Cath Lab Suites, 1 IR Suite
- 10,816 acute discharges
- 6075 surgical cases
WORKFLOW & PLANNING
Why is the OR different?

• Complexity of workflow
• Speed of the work
• Unpredictability
• Multiple stakeholder groups
Profit Center or Cost Center?

• Really, it’s the Contribution Margin
• More emphasis on:
  – Cost control
  – Patient throughput
  – Outcomes
## Managing Demand

<table>
<thead>
<tr>
<th>Policies</th>
<th>Benchmarks</th>
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<tbody>
<tr>
<td>• Elective Scheduling</td>
<td>• First case start</td>
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<tr>
<td>• Add-on and Emergency Scheduling</td>
<td>• Turnover times</td>
</tr>
<tr>
<td>• Late (evening) cases</td>
<td>• Room and Block Time Utilization</td>
</tr>
<tr>
<td>• Doctors Desired Time and Pre-Dependency Cases</td>
<td>• Late starts (and why)</td>
</tr>
<tr>
<td>• When to open an additional room(s)</td>
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</table>
Engaging Physicians

- The work day starts at 7 am
- There is no defined lunch period
- The work day ends sometime
- The case load is unpredictable
Requirements

• It’s not as simple as asking them what they want.
• It’s not as simple as doing the same thing as everywhere else in the hospital.
• What they say they want may be limited by their own understanding of the complexity of their work.
Workflow diagram
Surgical Milestones

- Milestones must be determined before you can use them
- Milestones may change depending on the context of the case
- Milestones may change as you implement different modules
Milestones

- Patient arrived
- In Preop
- Ready for Holding
- In OR
- Start Surgery
- Out of OR/In PACU
- Ready for Discharge

Payment Models

- Traditionally, Volume-based billing and payment
- Shift to Value-Based Purchasing (VBP)
- Shift towards Episode of Care (bundled) payments
- All require extensive analytics and reporting mechanisms

BARRIERS TO IMPLEMENTATION
How long does it take?

• If it takes longer to document than it takes to do the work, you have a problem.

• If it takes longer to document than the interval between subsequent tasks, you have a problem.
  
  “We found it was better when we added a second nurse in the room to deal with the charting”
Not Paying Attention
Go / NO GO!

• Hard deadlines generally cause an increase in implementation failures
• Testing must be thorough and varied
  – Both structured tests and random tests should be used
  – Make sure to include all reports
• Do NOT advertise a Go Live date until you have actually made the Go decision.
• Have a plan for a KILL (Go Dead) process
BENEFITS SPECIFIC to ANESTHESIA INFORMATION MANAGEMENT SYSTEMS (AIMS)
Unique documentation

- Airway Management
- Malignant Hyperthermia
- Medication responsiveness
Vigilance

• “state of readiness to detect and respond to certain specified small changes occurring at random intervals in the environment”

  Mackworth NH. Some factors affecting vigilance. Advancement of Science 1957; 53:389-393

• “… task which requires the detection of changes in a stimulus during long monitoring periods when the subject has little or no prior knowledge of the sequence of the changes”
  
  – NOT repetitive work

Participation in Registry, Reporting and Benchmarking
Evolving Federal Reporting

- Meaningful Use (MU)
  - Exclusion is based on the PLACE OF SERVICE
  - Most anesthesiologists are not automatically excluded
  - Most reporting items do not apply to anesthesiologists
- Physician Quality Reporting System (PQRS)
  - Voluntary (for now)
  - Limited measures available for anesthesiologists but improving
- Merit-Based Incentive Payment System (MIPS)
  - Combining MU and PQRS
NACOR Outcomes

• NACOR records 48 different quality indicators.
• Most of them have an incidence ranging from 1/1000 to 1/100,000

1. Case Delay (11.608%)
2. Hemodynamic instability (6.503%)
3. Inadequate pain control (3.364%)
4. Nausea/Vomiting (3.019%)
5. Extended PACU Stay (1.58%)

Two of the top 5 are ADMINISTRATIVE

Anesthesia in the US 2015, Anesthesia Quality Institute
Co-Morbidities

• Pre-existing disease affects postop outcomes
• Adequate documentation best obtained via Anesthesia H&P
• Submission through Registry also allows benchmarking
Population Health
PROCESS IMPROVEMENT and ADDED VALUE
Maintenance of Certification

- Maintenance of Certification (MOC) is required by ABMS of all specialty boards

- ABA requires Case Evaluation
  - Clinical outcomes and patient feedback
  - Compared with evidence
  - Implement improvement plan
  - Evaluate effectiveness of plan

- ABS requires participation in an Outcomes Registry or QA Program
  - Data review every 6 months
  - ACS Case-Log system, NSQIP, SCIP, NTDB, others
Ortho and Blocks - 1

- Surgeons say that they don’t want Regional Blocks used for their total joints “because the patients can’t walk and do PT”
- RN and PT staff report patients are “weak in the legs.” There have been several near falls and 2 falls in the last quarter.
- Anesthesiologist is at the bedside for one instance – patient is clearly orthostatic, did not receive the ordered transfusion, and did not have a block.

- SO now what?
Ortho and Blocks - 2

- Chart Review over 3 month period – 77 patients
- Variety of anesthetic techniques
- Uniform postop narcotic and NSAID orders
- 47 patients with blocks, 17 required transfusion, 27 had documented hypotension or dizziness

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<thead>
<tr>
<th></th>
<th>FN B</th>
<th>Spinal</th>
<th>Epidural</th>
<th>GA</th>
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<tbody>
<tr>
<td>Total</td>
<td>20</td>
<td>26</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Transfusion</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Hypotension</td>
<td>11</td>
<td>6</td>
<td>0</td>
<td>10</td>
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Ortho and Blocks - 3

• Changes Made:
  – PT does initial assessment in PACU if there is a delay in getting the floor bed
  – Blood Bank has changed the process to get transfusions ready faster
  – PT ensures that a set of orthostatic vitals are done before they get the patient out of bed
  – Surgeons started using Tranexamic Acid

• Impact:
  – Fall rate decreased over 50% (2 in 2015, 0.7%)
  – Transfusion rate decreased by 50%
  – LOS decreased by 1 day
TJC Survey!

- During anesthesia build, the structure of items in the H&P object was defined.
- Some items are required, some are optional.
- Surgeon’s H&P missing -- no problem, the anesthesia H&P is more thorough than the surgeon’s would have been anyways!
  - end result: *no citation*
Remote Monitoring

• Physicians able to monitor patients in real-time
• Physicians able to identify clinical changes
  – before nursing staff recognize the change
• Decreased time to decision and to incision

• End result: improved fetal and maternal outcomes
PreAnesthesia Questionnaire

- Staff calls patient as soon as case scheduled
- Anesthesia Preop questionnaire, with weighted scoring for history
  - Determines which (if any) labs and studies are required
  - Determines which patient needs to come in for an appointment

- Decreased testing by over 30%
- Decreased need for appointments to <10% (from >90%)
- Decreased DOS cancellations to <2%
Premium Pay - 1

• Administration sets a hospital-wide goal to reduce Premium Pay to 5% or less.

• Staff are sent home early or cancelled on short notice “to save money.” Per diem staff have essentially vanished, taking jobs elsewhere.

• Department management thinks this is all related to the unpredictability of surgical volume.

• How do we resolve this?
Premium Pay - 2

• Time Card data imported into Analytics, paired with the OR personnel data and case data.

• Two major findings:
  – Disproportionate amount of overtime amongst one staff type
  – Inadequate staffing in the afternoon

% Overtime

- RN
- CST
- Orderly
- Other

<table>
<thead>
<tr>
<th>Time Block</th>
<th>Rooms Open</th>
<th>Rooms Staffed</th>
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<tbody>
<tr>
<td>7a-3p</td>
<td></td>
<td></td>
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<tr>
<td>3p-5p</td>
<td></td>
<td></td>
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<tr>
<td>5p-7p</td>
<td></td>
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</tbody>
</table>
Premium Pay - 3

• Changes Made:
  – Two new shifts created (9a-5p, 9a-7p)
  – New staff hired to address these new shifts
  – Better utilization of per diem staff

• Impact:
  – **$563,000** savings in premium pay
Electronic Bill Submission

• Direct submission from the Anesthesia Record to the Billing Service
• Decreased average time for receipt from 15 days to 4 days
• Days in Accounts Receivable (DAR) went from 52 days to 41 days
Agenda

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- Barriers to Implementation
- Benefits Specific to AIMS
- Process Improvement
# Summary

**S** • Physician Satisfaction by facilitating MOC information gathering  
• Patient Satisfaction with telephone interactions  

**T** • Orthopedics patients with decreased falls, transfusions and LOS  

**E** • TJC Survey  
• Remote monitoring  

**P** • PreAnesthesia Questionnaire decreases testing and appointments  

**S** • Revised staffing grid with decreased Premium Pay  
• Shortened time to bill submission and Days in AR
Questions

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