



## MOCA 2.0<sup>®</sup> QUALITY IMPROVEMENT (PART 4) COMPLETED ACTIVITIES

Review the examples of completed Quality Improvement activities below to learn more about each type. If you have any questions, email us at [moca@theaba.org](mailto:moca@theaba.org).

### INSTITUTIONAL/DEPARTMENTAL QUALITY IMPROVEMENT PROJECT LEADER

#### Perioperative Surgical Home (PSH) Pilot

1. **References:** List the relevant clinical guidelines and publications used to inform the design and implementation of the project.

**Example:**

- Boudreaux AM, Vetter TR. A primer on population health management and its perioperative application. *Anesth Analg*. 2016;123:63–70.
- Garson L, Schwarzkopf R, Vakharia S, et al. Implementation of a total joint replacement-focused perioperative surgical home: a management case report. *Anesth Analg*. 2014;118:1081–1089
- Vetter TR, Jones KA. Perioperative surgical home: perspective II. *Anesthesiol Clin*. 2015;33:771–784.

2. **Data Collection:** Provide the time frame of the project, the data collected, and the outcome.

**Example:**

- Implementation of a Perioperative Surgical Home (PSH) in Total Joint Arthroplasty (TJA)
- Length of Stay (LOS) Decreased from 3 days to 1.5 days over 2 years
- Discharge Disposition (DD) from 50% home health and 20% SNF to 80% self-care and 10% SNF and Home Health in 2 years
- Readmission Rate (RR) Decreased from 6% to 2% in 2 years
- The implementation of the PSH in TJA shows that through preoptimization and standardization, significant increases in the quality of care can be achieved.

3. **Evaluation:** Describe how the team determined whether the project was successful.

**Example:**

- Process Measures – Adherence rate to agreed-upon protocols
- Outcome Measures – The results of agreed-upon quality measures for this specific service line (e.g. LOS, DD, and RR)
- Citizenship Measures – Meeting attendance and participation of providers
- Patient Reported Outcomes – Patient satisfaction

4. **Changes in Practice:** Indicate any practice changes that occurred as a result of the QI project.

**Example:**

- Standardization of the perioperative process
- Guided physician discussions regarding patient care
- Timely feedback to physicians regarding patient outcomes
- Adoption of this method by other service lines

## IMPROVEMENT PLANS

1. **Data Summary:** Summarize in two or three sentences the feedback, review or data report and provide a brief statement with regard to why it was important to your clinical practice.

### Example:

We were experiencing long wait times for patients at our pain clinic. Patients were happy with our services, but were unhappy about the wait times. A 360 review was conducted which informed countermeasures that we were able to implement.

2. **Change in Practice:** Report any practice changes that occurred as a result of the feedback, review or data report.

### Example:

- We have hired more staff to triage patients in a timely manner.
- Online check-in was established and encouraged so patients could check in and make note of their wait time.
- Processes were implemented for patients to complete all diagnostic workup prior to coming to the clinic for the procedure(s).
- Back office staff was increased to accommodate patient questions, prescription refill requests, and follow-up visit questions.
- Additional PA's and NP's have been hired to expedite patient visits to be handled in a smooth manner, especially for established patients.

## CLINICAL PATHWAY DEVELOPMENT LEADER

1. **Pathway Summary:** Describe the clinical pathway and the rationale for its development.

### Example:

Clinical Pathway: New Onset Atrial Fibrillation in the Preoperative Patient. Patients with new onset atrial fibrillation who present prior to outpatient elective surgery have led to cancellations and delay in surgery. A proper workup of the patient by the cardiologist is required, which takes time, contributes to inefficient use of OR resources, and leads to patient dissatisfaction.

We have developed a routine pathway at our institution that will avoid these same-day cancellations and should save money and improve patient satisfaction.

2. **Pathway Implementation:** Describe how and when the pathway was implemented.

### Example:

This clinical pathway was implemented by coordination with the perioperative clinical manager and the chief of cardiology at our institution. We met and discussed a better approach for our patients. Once a plan was developed, I presented it to the partners in our anesthesiology practice. Once discussed and

agreed upon, it was formalized with the perioperative manager.

The chief of cardiology met and presented his opinion and considerations to our department with a formal conference as well.

3. **Pathway Benefits:** Provide data with regard to any clinical outcome benefits of the new pathway.

**Example:**

Patients with new onset atrial fibrillation (AF) need a proper workup by a cardiologist to determine the etiology. AF may be primary with regard to heart disease (e.g., ischemia or left atrial dilation) or systemically-related (e.g., hyperthyroidism or infection). Understanding the cause of AF, and appropriate treatment can prevent stroke and heart failure. The new pathway will also save our institution time and money. Previously, procedures were canceled after the OR room was setup. Teams may have waited for up to an hour before receiving notice of case cancellation. The average OR time costs \$22-\$133 per minute in the US (*Journal of Clinical Anesthesia*. 2010; 22: 233-236). With a rate of 1-2 cancellations a month and a rough estimate of 45 minutes of OR time per cancellation times \$62 per minute (US average), we estimate savings of \$4,185 a month in OR time alone. This doesn't include wasted OR stock that was opened and discarded unused. More importantly, an earlier diagnosis and workup improves patient safety and satisfaction. The new pathway will be initiated when a patient arrives for preoperative screening. If AF is diagnosed, proper action in concert anesthesiology will lead to the consultation and evaluation.

## CLINICAL PATHWAY DEVELOPMENT PARTICIPANT

1. **Pathway Summary:** Describe the clinical pathway and the rationale for its development.

**Example:**

We selected colorectal surgery patients in our practice to institute an enhanced recovery pathway to improve the quality and speed of patient recovery. Partnering with our colleagues (surgeons and fellow anesthesiologists) as well as our hospital and clinical nursing partners, we were able to develop consistent processes aimed at enhancing the recovery for all of our colorectal surgery patients. We instituted evidence-based medicine using a multidisciplinary clinical pathway, and we measured results. Our goal was to speed recovery, minimize postop complications (DVT, UTI, Ileus) and to improve patient satisfaction by addressing preop fitness/hydration/nutrition, intraop fluid management, multimodal pain control, nausea prevention, and postop earlier return of bowel function/earlier ambulation. Our prior LOS was in the 10<sup>th</sup> percentile, and processes were inconsistent.

2. **Pathway Implementation:** Describe how and when the pathway was implemented.

**Example:**

In 2016 we implemented the ERAS program. We started by forming an ERAS committee consisting of anesthesia providers and surgeons, along with representatives from nursing all along the perioperative touch points. Also included were other providers like PT, nutritionists and data analysts. It was a true multidisciplinary team. The committee, along with all stakeholders, met in various forums (M&M, department meetings, ERAS meetings etc.) and fine-tuned the details. Educational and video materials were developed for patients and providers. Changes included adding preop hydration/nutrition, minimizing opioids intraop, and focusing on modalities that minimized side effects and enhanced

recovery. Data was collected and analyzed. We aligned all stakeholders to follow these clinical pathways and gained buy-in across the board as data began showing statistically significant improvements.

3. **Pathway Benefits:** Provide data with regard to any clinical outcome benefits of the new pathway.

**Example:**

In 2015, providers were not aligned and LOS for colorectal surgery patients at our hospital was in the bottom 10 percent nationally. A review of first quarter data (after ERAS was implemented) showed a marked improvement in LOS. (The data included 48 colorectal surgeries, compared to 98 elective procedures in 2015). MeanLOS decreased from 6.1 to 4.5 days. Additionally, there was a significant increase in compliance and consistency with multimodal (opioid sparing) pain management, fluid management, DVT prophylaxis, and urinary catheter management. We also achieved a robust data collection process (used in conjunction with our NSQIP team) to measure data points such as compliance, patient opioid consumption, LOS, and postop complications (e.g. renal failure, infection, UTI, DVT, anastomotic leaks, readmissions).

## POINT-OF-CARE LEARNING

1. **Topic:** Identify the topic and stipulate whether it involved a rare condition, a condition not managed recently by you, a diagnostic dilemma, and/or a controversial issue.

**Example:**

A patient presented with a history of porphyria and episodes of acute porphyric attacks during surgery and anesthesia related to administered medications. The patient was very concerned that an attack of acute porphyria could be triggered during anesthesia. I had not taken care of a patient with porphyria in the recent past nor studied the topic for some time. I felt it would be important to understand the condition better, and to know which medications were unsafe for patients with porphyria.

2. **Information acquisition:** Identify the source of information and acknowledge relevant clinical guidelines, if any. This should include whether the information acquisition occurred without difficulty or whether it was impeded by any of the following: a) computer access limitations, b) insufficient computer search tools, c) inadequate databases or d) limited access to full text journals.

**Example:**

- Syal, K. et al. "Acute Intermittent Porphyria." J Anaesthesiol Clin Pharmacol. 2015 Apr-Jun, 31(2):261-263.
- Hines, et al. "Stoelting's Anesthesia and Co-existing Disease," 6<sup>th</sup> edition. Saunders. May 2012.
- Kaur, et al. "Acute Intermittent Porphyria: Diagnostic Dilemma and Treatment Options." J Anaesthesiol Clin Pharmacol. 2015 Jul-Sep 31(3):407-408.
- <http://www.porphyrifoundation.com/testing-and-treatment/drug-safety-in-acute-porphyrria>
- Armen, et al. "Anesthetic Management for Combined Double-Valve and Coronary Artery Bypass in a Patient with Acute Intermittent Porphyria." J Cardiothoracic and Vasc Anesth. June 2009; 23(3):364- 368.
- Kauppinen. "Porphyrias." Lancet 2005; 365: 241–52.

3. **Impact of Knowledge Gained:** Report whether the knowledge you gained informed clinical decision-making, confirmed a diagnosis, improved your understanding of a medical condition, and/or helped

you adhere to a best practice guideline.

**Example:**

After studying the topic, I better understood which medications are safe for patients with porphyria. I understood the pathophysiology better and what symptoms to watch for as possible heralds of a porphyria attack. The case went well, and the patient emerged from anesthesia without issues. The patient was discharged and went home the same day.

4. **Impact of Knowledge Gained:** Explain if the knowledge you gained changed a patient's medical management or diagnosis. If it did, describe whether that resulted in a new treatment plan, administration of different medications, use of different monitors, utilization of alternative diagnostic testing, and/or additional consultation(s). Additionally, state whether the knowledge you gained led to an improved clinical outcome.

**Example:**

Fortunately, most anesthetics are not triggers; however, certain medications are not recommended and can be dangerous for porphyric patients when administered during the perioperative period. It is important to be aware of which medications can cause an episode of porphyria. As discussed in the above articles, catastrophic results can occur when patients with porphyria are given the wrong medications. These include certain antibiotics, antiemetics, antiepileptics, steroids, and so on. Fortunately, this patient did well and was discharged the same day without issue.

## SELF-DIRECTED CASE EVALUATION, PRESENTING YOUR CASE AT M&M/CASE DISCUSSION

1. **References:** Identify the clinical guidelines and publications relevant to the case evaluation, M&M conference or case discussion.

**Example #1:**

I reviewed the article that appeared in Anesthesiology entitled: Success of Intubation Rescue Techniques after Failed Direct Laryngoscopy in Adults, by M. Arizona, et al.

**Example #2:**

- Anaphylactoid reactions to Dextran 40 and 70: Reports to the United States Food and Drug Administration, 1969 to 2004. Journal of Vascular Surgery, Volume 43, Issue 5, May 2006, Pages 1004-1009.
- Prevention of Adverse Reactions to Dextran, US FDA OHRMS Docket Power Point Presentation Karl- Gosta Ljungstrom, MD/PhD, 2005.
- Fatal Dextran-Induced Allergic Anaphylaxis. European Journal of Allergy and Clinical Immunology. 8 August 2002.

2. **Data Collection:** Describe details of the case(s) without revealing protected health information.

**Example #1:**

A first attempt at intubation on a patient resulted in a grade 4 view. Even with a BURP maneuver, the view did not improve to grade 3. A change to a Miller blade didn't improve the view either. The aggressive intubation attempts led to bleeding in the airway. After calling for a video laryngoscope, I was able to intubate the patient, but the attempt was hindered by bleeding and increased salivation

secondary to initial direct laryngoscopies.

**Example #2:**

An 82-year-old male presented for carotid endarterectomy (CEA). He underwent a previous CEA on the other side approximately one year earlier without difficulty. Previous surgeries included coronary bypass surgery without complication. He had no prior history of allergic reactions. Approximately 30 minutes into the case, the surgeon requested administration of dextran 40 (100 mL bolus, 25 mL/hr) to decrease platelet aggregation and adhesiveness (postop thromboembolic prophylaxis) and promote blood flow in the microcirculation. About 10 minutes after starting dextran, the patient exhibited intense bronchospasm with increased peak airway pressures and minimal ETCO<sub>2</sub>. Fiberoptic bronchoscopy confirmed a patent airway. Bronchodilators were started, depth of anesthesia was increased, epinephrine bolus and infusion were initiated, and the case aborted for suspected anaphylaxis to dextran. Over the next several minutes the patient's bronchospasm improved considerably, and shortly after arrival in the ICU he was successfully extubated. At no point was there any hemodynamic collapse (low blood pressure or extreme tachycardia). There was some question as to any skin manifestations of "hives" or other rash.

The differential diagnosis of the cause of the bronchospasm included light anesthesia, allergic reaction to muscle relaxants at time of induction, allergic reaction to dextran, and allergic reaction to cephalosporins. Of note, the patient had a prior documented history of rocuronium, cephalosporins, and dextran administration. Induction for this particular surgery included succinylcholine, which the patient may or may not have had previously.

3. **Changes in Practice:** Report any practice changes that occurred as a result of the case evaluation, M&M conference, or case discussion.

**Example #1:**

This article solidified in my mind that I should be quick to switch to video laryngoscopy when I recognize a difficult intubation. When used properly, a video laryngoscope requires less force and is less likely to cause airway trauma. If I suspect that more than average force is required to obtain an acceptable view, I should immediately switch to video laryngoscopy. Additionally, I should utilize the video laryngoscope more as a first attempt device if I anticipate a difficult intubation.

**Example #2:**

Anaphylactoid reaction is an adverse reaction with allergic symptoms but NOT involving preformed antibodies. An allergic reaction involves antibodies (often IgE but sometimes of other classes (IgG, IgM, IgA). Mild dextran reactions are anaphylactoid and many of these patients have a history of allergic reactions. Severe dextran reactions are anaphylactic and are caused by preformed dextran antibodies, predominantly of IgG class, causing a type III or immune complex anaphylaxis. Elevated IgE levels and histamine liberation have not been found in dextran-induced anaphylactoid/anaphylactic reactions.

Most patients had an onset of symptoms shortly after the start of the infusion, suggesting that only a small dose of dextran is needed to incite a reaction. As such, a test dose may not be helpful to determine which patients will react to dextran. In the future, I will have a heightened sense of awareness and be prepared to deal with potential anaphylaxis in patients to whom I am asked to administer, dextran especially those patients who received dextran previously.