SPECIAL SERIES

Enhanced Recovery After Surgery

When working with interdisciplinary surgical teams to implement Enhanced Recovery After Surgery (ERAS), we are often asked what specific element the team should focus on in order to realize positive patient outcomes, including reduced complications and earlier return to function. ERAS elements are present throughout the surgical pathway, and no particular one is the "magic bullet" that ensures a surgical team will have the positive patient outcomes associated with ERAS. These elements address a variety of topics, including a patient's modifiable risk factors such as diabetes and anemia.

High compliance leads to improved outcomes such as less morbidity, fewer readmissions, and shorter length of hospital stay.[1] Additionally, research is also demonstrating the correlation between compliance with ERAS elements and longer term survival rates from cancers.[2] At Virginia Commonwealth University Health System (VCU Health) in Richmond, we are using quality standards to establish operational definitions for ERAS elements. This article describes what those standards are and how they are implemented. Previous articles in this series appeared in the October 2019 and November 2019 issues.

Establishing quality standards for ERAS care elements

To achieve VCU Health's goal to implement ERAS house-wide, we needed to systematize the delivery of clinical best practices across surgical departments, changing the way we execute the care delivery process. We began by shifting how we approach change from reactive to fundamental.

Reactive change limits an organization to a focus on keeping day-to-day operations running at the current level of performance; leaders are constantly putting out fires or applying band-aids through tactics such as routine problem solving or reaction to a special circumstance. Reactive change often does not result in improvement, but only restores the previous level of function. It also often involves a trade-off or compromise in the form of increased cost, such as additional work or new resources. Reactive change can be put into place quickly, producing immediate impact, but rarely considers the full care continuum.

Fundamental change focuses on determining or redefining the essential structure, resulting in a new system of performance. This is the type of change that is needed for improvement, and should be employed when the needed improvement extends beyond addressing special circumstances, an opportunity exists to positively impact more than one aspect of the system, and/or a lasting impact is desired. System design or redesign is often used to address multifactorial problems that require a systems approach to reach a reliable resolution, and it involves changing what work is done or how it is done.

Our first step in making fundamental changes is to adopt quality standards to address each of the ERAS elements of care along the surgical care pathway. Quality standards provide a tool for securing approval on consistent care methods rooted in scientific evidence. Standards also ensure that appropriate, current, supported evidence is at the base of care delivery.[3]

The ERAS Society has developed evidence-based pathways for multiple surgical procedures. Within each pathway, there are recommendations for preoperative, intraoperative, and postoperative elements of an ERAS pathway. VCU Health is using these pathways, coupled with evidence within specific domains, to develop institutional quality standards for addressing ERAS elements across surgical procedures.

These standards are designed for all team members involved in the care continuum. Although each standard may target a particular topic or a particular point in the care continuum, all clinical team members should be aware of the standards because of potential implications to downstream care.

Quality standard format

We begin by defining a template for VCU Health surgical quality standards. This ensures that the governance groups that maintain oversight of these standards receive consistent information on how each standard was developed, while also providing staff with the necessary information to ensure patient care meets the standard.

The standard template includes:

- **Recommendation:** outline of the expectation, including patients affected, any clinical criteria such as lab or diagnostic results, and the applicable intervention
- **Clinical rationale:** Description of the clinical evidence base
- **Quality and cost rationale:** Cost per patient and expected financial return on investment, if applicable
- **Inclusion criteria:** Description of patient population to which the standard applies
- **Contraindications:** Clinical conditions or other criteria that exclude a patient from the standard expectation
- **Treatment timeline:** General guideline to aid in ensuring adequate time is allotted to achieve the desired effect
- **Impacted internal policies:** Included to ensure that organizational

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policies are updated accordingly to support the new standard of care

- **Education and implementation:** A brief outline of how the change will be implemented, who is impacted by the change, and how the change will be communicated
- **Clinical evidence:** Appendix citing the evidence references used to develop the organization standard.

Establishing quality standards

Quality standards, at their core, are a tool for managing expectations for clinical standards of care. They provide guidance and reference supporting evidence, serving as a reference point when questions arise. They also demonstrate executive support through a strong governance process.

VCU Health's ERAS quality standards are upheld by perioperative governance. Our main governing body is the Perioperative Executive Committee (PEC), cochaired by the chief operations officer and an elected chair approved by the medical executive committee. Department chairs from anesthesia and each surgery department, as well as the vice president of perioperative services, comprise the committee membership.

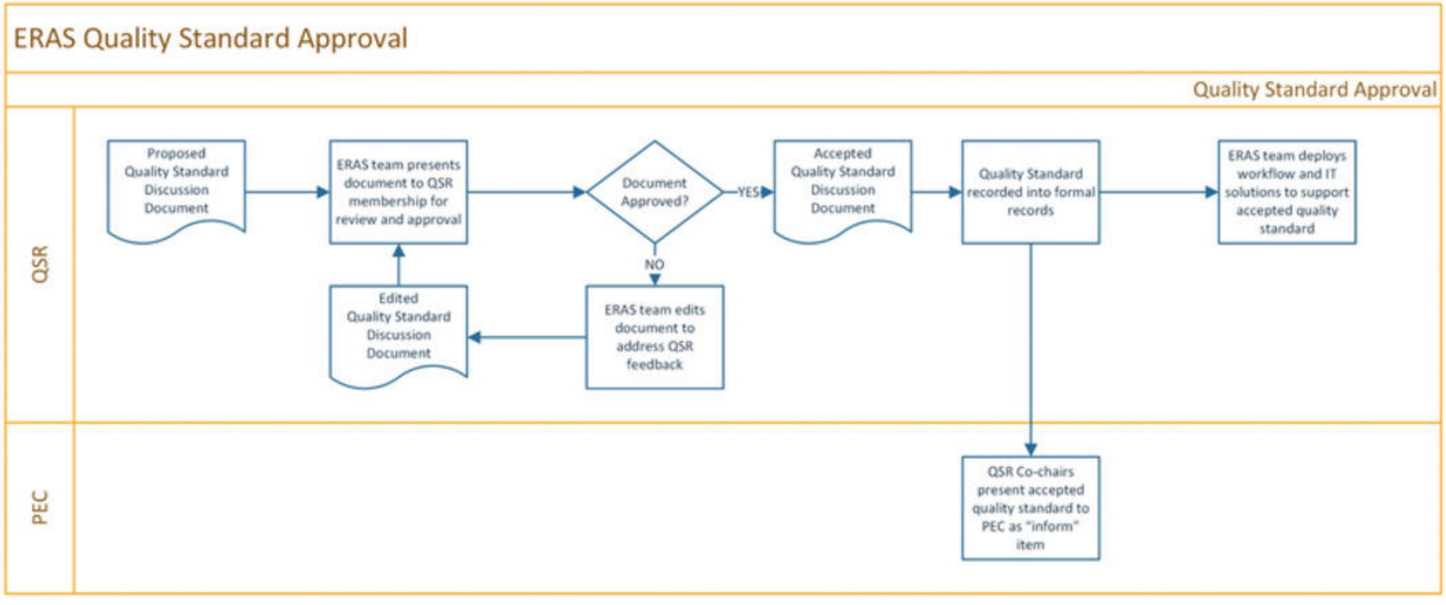
This committee is responsible for approving policies, supporting operational guidelines, and holding team members accountable to deliver a standard patient experience that incorporates evidence-based best practice. They have ultimate approval over any quality standards proposed.

The Quality, Safety, and Regulatory (QSR) subcommittee of PEC is established to monitor and improve patient and staff safety along with quality and regulatory compliance. The committee is responsible for identifying key performance indicators, reviewing regulatory issues and ensuring compliance with requirements, promoting standardization in patient experience, and monitoring data. Membership includes a physician from each surgical department; anesthesia providers; representatives from OR nursing; and the quality coordinator, educator, and OR supply chain, information systems, and scheduling staff.

This committee provides initial approval of quality standards. For each quality standard, a surgeon is identified to lead an interprofessional team in development of the document. The team identifies evidence that forms the basis for the template, which is shared among the stakeholders, allowing an opportunity for feedback and refinement. Once that step is complete, the document is brought to the QSR committee for ratification.

All quality standards approved by the QSR committee are sent to the PEC for formalization. The standard is then published to the intranet and disseminated to all surgeons, anesthesia providers, and perioperative teams via a variety of methods including email, printed memos, grand rounds presentations, and division meetings. Once the standard is communicated, system tools should be updated to further reinforce the change in practice.

Formal exceptions to the quality standards can be brought before the QSR committee for approval if there is evidence to support the exception and if the request is based on patient factors and not individual preferences.



This flow chart depicts the steps taken by the Quality, Safety, and Regulatory (QSR) subcommittee of the Perioperative Executive Committee (PEC) to obtain approval for ERAS quality standards.
Source: Paula Spencer, MSHA, PMP, CPHIMS. Used with permission.

Quality standards for prehospital optimization

For prehospital optimization, the quality standards are intended to ensure that our patients' modifiable risk factors can be managed consistently within our organization. These risk factors include:

- hydration and carbohydrate loading
- anemia identification and correction
- glycemic management
- nutrition therapy
- services to address chronic opioid use
- frailty assessment and intervention.

Measuring standards

Although the interdisciplinary team, feedback opportunities, and approval from executives are important to the initial adoption of a quality standard, the ongoing utilization by frontline staff can be measured through both process and outcome measures by:

- Identifying the outcome you want to measure as a representative of the quality standard
- Determining data points you will use as markers of the desired process
- Presenting information using a visualization tool that first provides insight into individual performance compared to the group for the desired outcome and also allows drill-down capability for individuals to see performance on the associated process measures
- Providing a feedback loop for reinforcing desired practice.

It is critical to approach this data from a learning perspective. The purpose of the data is to compare process to outcomes to ensure the standards are producing the intended results. Data should be analyzed to see if additional resources are needed to support the change or whether the standard should be refined to achieve the desired patient outcomes.

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Quality standard for preoperative hydration and carbohydrate loading

Hydration and carbohydrate loading are focused on improving patients' reserves to get through surgery with fewer complications and return to preoperative function sooner. We created a quality standard for providing patients with a designated carbohydrate drink to consume prior to surgery.

Recommendation: Eligible elective surgery patients should routinely receive oral carbohydrate drinks prior to surgery: 800-mL volume (containing 100 g carbohydrate) of carbohydrate drink (maltodextrans) the evening prior to surgery and 400-mL volume (containing 50 g carbohydrate) the morning of surgery. The morning dose has been shown to be effective up to 2 hours before general anesthesia. (Actual volume may vary based on the product used.)

Clinical rationale:

- Patients are often dehydrated before surgery despite current nothing by mouth guidelines allowing clear fluids up to 2 hours prior to surgery.
- Dehydration can be exacerbated by delays in surgical listing and the use of oral bowel preparation.
- Dehydration and nothing by mouth has been shown to increase the risk of anxiety, stress, and hunger; nausea and vomiting postoperatively; and use of intravenous fluids during surgery and postoperatively.
- Increasing evidence shows that prolonged starvation causes higher residual gastric volumes of low pH fluid (gastric acid) than if patients receive a drink 2 hours before surgery, and there is gastric emptying leading to less residual volume of gastric acid.
- Patients with gastric emptying issues cannot be guaranteed an empty stomach even with prolonged starvation and hence must be treated as special cases.

Quality and cost rationale: Cost for 3 servings—the recommended dose for most patients—is approximately $6.

Inclusion criteria: Any surgical patient undergoing an elective procedure who is able to consume fluids.

Contraindications: Oral carbohydrate drinks should be avoided or limited in the following instances: insulin-dependent diabetic patients; diabetic patients with poor glycemic control (HbA1c>9); severe heart failure patients; patients with certain gastric issues or prior gastric procedures; giant paraesophageal hiatal hernia patients; patients with gastroesophageal reflux disease.

Our full quality standard document includes details and rationale for each contraindication.

Treatment timeline:

- Night before surgery: 2 servings of carbohydrate drink are best taken after the evening meal over a few hours. This is particularly important if the patient is taking bowel prep.
- Morning of surgery: 1 serving of carbohydrate drink is to be taken 3 hours prior to surgery, which ensures the patient is finished at least 2 hours prior to surgery.

Impacted internal policies: These vary by organization.

Education and implementation: The department of anesthesia, in partnership with the department of surgery and affiliated subspecialties, has implemented Preoperative Assessment Communication Education (PACE) Clinic visits for surgical patients. During these visits, patients receive preoperative screening, optimization, and education. Eligible patients are educated on taking the carbohydrate drinks on the evening prior to and the morning of surgery.

Ineligible patients for whom carbohydrate drink consumption is contraindicated are given other instructions. Education is required for patients, preoperative clinic staff, nursing, physicians and surgeons, dieticians, surgeon's office staff, secretaries, and pharmacy.

Clinical evidence:

- Fawcett W, Ljungqvist O. Starvation, carbohydrate loading, and outcome after major surgery. BJA Education. 2017;17(9):312-316.
- Scott M, Fawcett W. Oral carbohydrate preload drink for major surgery—the first steps from famine to feast. Anaesthesia. 2014;69(12):1308-1313.

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Next steps

Creation of quality standards is just the beginning of implementing ERAS as a standard of care. An ERAS standard of care program must consider cost, optimal workflow, executive support, and appropriate staff training. The program must be supported by a suite of data analytics that not only measure compliance with the process, but also look at surgical outcomes and the correlation between the two. Additionally, a formalized change management process is imperative to successful, sustainable transformation. ✣

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References

1. Ljungqvist O, Scott M, Fearon K C. Enhanced Recovery After Surgery. JAMA Surg. 2017;152(3):292-298.
2. Gustafsson U O, Oppelstrup H, Thorell A, et al. Adherence to the ERAS protocol is associated with 5-year survival after colorectal cancer surgery: A retrospective cohort study. World J Surg. 2016;40(7):1741-1747.
3. Woolf S H, Grol R, Hutchinson A, et al. Clinical guidelines: Potential benefits, limitations, and harms of clinical guidelines. Br Med J. 1999;318(7182):527-530.