Commentary: Enhanced recovery after cardiac surgery: A game changer, passing fad, or somewhere in between?

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Central Message

The first North American report of ERAS in cardiac surgery supports the prospect of improving patient outcomes by optimizing and standardizing clinical pathways with evidence-based guidelines.

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In this issue of *The Journal*, Williams and colleagues¹ describe the largest published and first North American study on the feasibility and efficacy of an enhanced recovery after surgery (ERAS) program in cardiac surgery. In the 1990s, ERAS was first established in Europe for major abdominal surgery and has since been extended across several surgical procedures and specialties.² A group in the United Kingdom³ (105 patients) and another in France⁴ (71 patients) have previously reported their ERAS experience in cardiac surgery, showing shorter intensive care unit (ICU) and hospital length of stay (LOS).

This 932-patient study by Williams and colleagues¹ showed comparable results, demonstrating an institutional commitment to evidence-based ERAS recommendations for clinical pathways to optimize preoperative, intraoperative, and postoperative care. Although concepts such as earlier extubation and mobility are widely accepted, others such as carbohydrate loading before surgery appear less intuitive. The barriers to implementing an ERAS program in cardiac surgery stem from justifiable concerns that these patients are vulnerable from the effects of cardiopulmonary bypass, hypothermia, and other physiologic derangements; as a result, real-world experiences are instructive.

But is ERAS new or just “fast-track” by another name? Fast-track and rapid recovery have been part of cardiac surgery for more than 2 decades. Although the focus was initially reducing intraoperative analgesia to reduce the time to ventilator liberation, other fast-track programs have comprehensively included preoperative education, early extubation, prevention of postoperative nausea and vomiting, and earlier rehabilitation and discharge,⁵ similar to the current ERAS strategies. Perhaps the renewed impetus now is that, as the expected mortality rate for patients who undergo coronary bypass, aortic valve replacement, or mitral valve repair (composing 80% of heart surgeries) approaches 1% to 1.5%, a program will be gauged by “softer” quality metrics (eg, LOS). Moreover,

this will be emphasized even more as minimally invasive and transcatheter options in “low-risk” patients increasingly become part of the landscape. Although much of critical care is justifiably focused on organ dysfunction and device management for the “sickest of the sick,” process efficiency and enhancing value are central components of critical care in low-risk patients undergoing low-risk operations.

In their study, Williams and colleagues¹ demonstrated a substantial 15-hour reduction in ICU LOS after the implementation of ERAS. This was despite having a mixed cohort of coronary artery bypass grafting and valve procedure patients with a percentage of intra-aortic balloon pump use (16%-17%) twice as high as the Society of Thoracic Surgeons database average⁶ and a prevalence of previous stroke (21%-23%) 3 times higher than the Society of Thoracic Surgeons database average.⁶ Because the median extubation time was unchanged (5 hours), it raises the possibility of whether the observed reduction in ICU LOS was influenced by the earlier removal of intra-aortic balloon pumps, the more rapid weaning of vasoactive medications, or the earlier availability of step-down beds. However, if we apply the British cycling coach Sir David Brailsford’s concept of “aggregation of marginal gains” to surgical care, small incremental gains can cumulatively result in a benefit and improved outcomes.³

This may explain the observed reduction in ICU LOS, whereby small amounts of progress across several fronts may have collectively resulted in a benefit. It is most likely true that not all marginal gains are equally sized. Identifying those measures that provide more benefit may streamline the ERAS process and facilitate its adoption by skeptics. Indeed, many programs already perform several of these individual processes without being formally operationalized as an “ERAS protocol.” It is reassuring that implementation of ERAS and a shorter LOS did not come at the expense of increased readmissions or deviations in glycemic control.

In addition, the current opioid epidemic makes counteractive efforts such as ERAS’ multimodal analgesia strategy both timely and necessary. The prolonged use of opioids after 90 days has been observed in 3% of patients after coronary artery bypass grafting and in 6% to 9% after thoracic surgery.⁷ Although Williams and colleagues¹ examined opiate use during the first 24 hours after surgery, determining whether opioid use was reduced during the entire hospitalization or the first 30 to 90 days after surgery would more definitively demonstrate success.

In conclusion, one may ask how much of an effect occurred because of the Hawthorne effect,⁸ whereby people perform better because they are being observed. Perhaps the key to ERAS is the sustained commitment to process

improvement and knowing that those results are being tracked and, ultimately, judged.

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