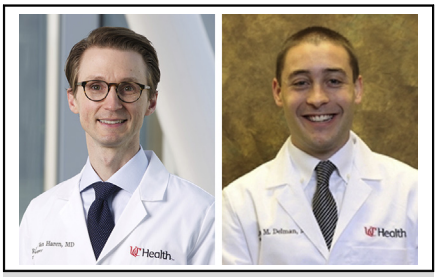
See Article page 317.

Commentary: Semper ad meliora: Continuous improvement in enhanced recovery pathways

Aaron M. Delman, MD, MS,[a] and
Robert M. Van Haren, MD, MSPH[a,b]



Robert M. Van Haren, MD, MSPH, and Aaron M. Delman, MD, MS

CENTRAL MESSAGE

Continuous improvement in enhanced recovery after thoracic surgery protocols can decrease opioid use in the hospital and at discharge.

Despite significant advances in opioid-mitigation strategies, more than 70,000 deaths in the United States were attributed to drug overdoses in 2019.[1] Furthermore, surgical intervention is associated with a high incidence of new and persistent opioid use in opioid-naïve patients.[2-4] Enhanced Recovery After Surgery (ERAS) pathways were developed to improve outcomes for surgical patients while simultaneously decreasing the amount of prescribed opioids.[5] In patients who undergo thoracic surgery, ERAS pathways are associated with improved patient outcomes such as decreased complications, length of stay, and narcotic usage.[6,7] While ERAS protocols have been implemented worldwide, the optimal protocol remains unknown.

Kodia and colleagues,[8] in their investigation "Optimization of an Enhanced Recovery Protocol for Opioid-Free Pain Management Following Robotic Thoracic Surgery," detail their institutional results following a change in their ERAS protocol to further decrease opioid use postoperatively. Their updated ERAS protocol involved diluting liposomal bupivacaine with 30 mL of 0.25% bupivacaine instead of normal saline to better mitigate pain in the immediate postoperative setting and potentially decrease the need for intravenous hydromorphone. In addition, they converted a scheduled tramadol dose to as needed. Subsequently, they conducted a retrospective comparative analysis to evaluate the association of the updated protocol with in-hospital and postdischarge opioid requirements. The authors report significantly less opioids were required in the postanesthesia care unit, in the hospital, and after discharge in the optimized ERAS protocol when compared with their original ERAS protocol, without a significant difference in patient-reported pain levels or operative complications.[8]

This investigation pushes the ERAS discipline forward by validating liposomal bupivacaine diluted with 0.25% bupivacaine's ability to drastically reduce in-hospital opioids and achieve near independence from schedule II opioids at discharge. Second, the investigators from University of Miami have set a strong example for continuous improvement in ERAS protocols. Their commitment to optimizing pain control in hospital and postdischarge is commendable, and they confirm that small, scalable, and reproducible modifications can have a drastic effect on minimizing opioid overdispensing, diversion, and abuse. As ERAS protocols come of age, thoracic surgeons can consider continued robust evaluation of the effectiveness and impact of optimized ERAS protocols. In particular, multicenter retrospective collaboratives of a single protocol or prospective interrupted time–series evaluations of ERAS protocols are warranted to evaluate the impact of comprehensive ERAS care.[9] In addition, questions still remain

From the [a]Department of Surgery, Cincinnati Research in Outcomes and Safety in Surgery (CROSS) Research Group, and [b]Division of Thoracic Surgery, Department of Surgery, University of Cincinnati College of Medicine, Cincinnati, Ohio.

Disclosures: The authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Oct 11, 2021; revisions received Oct 11, 2021; accepted for publication Oct 22, 2021; available ahead of print Feb 12, 2022.

Address for reprints: Robert M. Van Haren, MD, MSPH, 231 Albert Sabin Way ML-0558, Medical Sciences Building, Room 2472, Cincinnati, OH 45267-0558 (E-mail: vanharrn@ucmail.uc.edu).

JTCVS Open 2022;9:329-30
2666-2736

https://doi.org/10.1016/j.xjon.2021.10.060

regarding the impact of ERAS protocols on long-term outcomes and narcotic use for both opioid-naïve and chronic opioid users.

We congratulate the Kodia and colleagues on their commitment to continuous improvement in ERAS protocols for their patients and community at large. The near-elimination of schedule II opioids at discharge is encouraging for thoracic surgery patients nationwide.

References

1. Centers for Disease Control and Prevention. Drug overdose deaths. Accessed October 8, 2021. https://www.cdc.gov/drugoverdose/deaths/index.html
2. Brummett CM, Waljee JF, Goesling J, Moser S, Lin P, Englesbe MJ, et al. New persistent opioid use after minor and major surgical procedures in US adults. *JAMA Surg*. 2017;152:e170504. https://doi.org/10.1001/jamasurg.2017.0504
3. Brescia AA, Harrington CA, Mazurek AA, Ward ST, Lee JSJ, Hu HM, et al. Factors associated with new persistent opioid usage after lung resection. *Ann Thorac Surg*. 2019;107:363-8. https://doi.org/10.1016/j.athoracsur.2018.08.057
4. Levinsky NC, Byrne MM, Hanseman DJ, Cortez AR, Guitron J, Starnes SL, et al. Opioid dependence after lung cancer resection: institutional analysis of state prescription drug database. *World J Surg*. 2021;45:887-96. https://doi.org/10.1007/s00268-020-05865-9
5. Haro GJ, Sheu B, Marcus SG, Sarin A, Campbell L, Jablons DM, et al. Perioperative lung resection outcomes after implementation of a multidisciplinary, evidence-based thoracic ERAS program. *Ann Surg*. 2021;274:e1008-13. https://doi.org/10.1097/SLA.0000000000003719
6. Razi SS, Stephens-McDonnough JA, Haq S, Fabbro M II, Sanchez AN, Epstein RH, et al. Significant reduction of postoperative pain and opioid analgesics requirement with an Enhanced Recovery after Thoracic Surgery protocol. *J Thorac Cardiovasc Surg*. 2021;161:1689-701. https://doi.org/10.1016/j.jtcvs.2019.12.137
7. Van Haren RM, Mehran RJ, Mena G, Correa AM, Antonoff MB, Baker CM, et al. Enhanced recovery decreases cardiac & pulmonary complications following thoracotomy for lung cancer. *Ann Thorac Surg*. 2018;108:272-9. https://doi.org/10.1016/j.athoracsur.2018.01.088
8. Kodia K, Alnajar A, Szewczyk J, Stephens-McDonnough J, Villamizar NR, Nguyen DM. Optimization of an Enhanced Recovery After Surgery protocol for opioid-free pain management following robotic thoracic surgery. *J Thorac Cardiovasc Surg Open*. 2022;9:317-28.
9. Van Haren RM, Atay SM. Enhancing the study of enhanced recovery after thoracic surgery: methodology and population-based approaches for the future. *J Thorac Dis*. 2019;11(suppl 4):S612-8. https://doi.org/10.21037/jtd.2019.01.81