

Enhanced Recovery At A Glance

Intra Operative



Enhanced recovery refers to patient-centered, evidence-based, multidisciplinary team developed pathways for a surgical specialty and facility culture to reduce the patient's surgical stress response, optimize their physiologic function, and facilitate recovery. Enhanced recovery pathways can be used across any service line to standardize practice.



Intervention



Practice Options

Analgesia - Maintenance Phase

- ✓ Utilize short acting anesthetics
- ✓ Minimize opioids
- ✓ Consider beta blockers for laryngoscopy
- ✓ Lidocaine 1.5 mg/kg bolus followed by 1-2 mg/kg/hr*
- ✓ Ketamine 0.5 mg/kg bolus followed by 0.25-0.5 mg/kg/hr*
- ✓ Magnesium infusion 5-10 mg/kg/hr*
- ✓ Dexmedetomidine bolus 0.5 mcg/kg over 10 min and/or infusion 0.2-1 mcg/kg/hr*
- ✓ Propofol infusion 50-150 mcg/kg/min*

Analgesia - Emergence Phase

- ✓ Ketorolac 15-30 mg IV
- ✓ Decadron 0.1 mg/kg IV
- ✓ IV Acetaminophen — Minimal dosing interval q4h for adults, adolescents, and children ≥ 2 yrs.
- ✓ Utilization of neuraxial/regional anesthesia

Analgesia - Regional

- ✓ General anesthesia (GA) + thoracic epidural/spinal
- ✓ GA + intrathecal opioids
- ✓ GA + erector spinae (ESP) block
- ✓ GA + Transversus Abdominis Plane (TAP) blocks/quadratus lumborum (QL) blocks (+/- catheters)



IV Fluid Therapy

- ✓ Purposeful fluid administration (do not restrict fluids)
- ✓ Goal-directed fluid therapy with stroke volume optimization (see FEDORA protocol)**
- ✓ Goal-directed fluid therapy without advanced hemodynamic monitoring (see RELIEF protocol)***
- ✓ Restrict use of normal saline

Neuromuscular Blockade (NMB)

- ✓ Utilize quantitative neuromuscular monitor
- ✓ Objectively demonstrate adequate reversal

Standardize Care

- ✓ Maintain normothermia
- ✓ DVT prophylaxis
- ✓ Minimize catheters and drains
- ✓ Remove nasogastric tubes prior to end of surgery (unless otherwise indicated)

*May delay emergence, titrate accordingly

**Calvo-Vecino JM, Ripolles-Melchor J, Mythen MG, et al. [Effect of goal-directed haemodynamic therapy on postoperative complications in low-moderate risk surgical patients: a multicentre randomised controlled trial \(FEDORA trial\)](#). *Br J Anaesth*. 2018;120(4):734-744.

***Myles P, Bellomo R, Corcoran T, et al. [Restrictive versus liberal fluid therapy in major abdominal surgery \(RELIEF\): rationale and design for a multicentre randomised trial](#). *BMJ Open*. 2017;7(3):e015358.

For additional references, see the AANA Enhanced Recovery resource page at www.aana.com/EnhancedRecovery and the Society for Opioid Free Anesthesia (SOFA) at www.goopioidfree.com.

The AANA thanks Joshua Newman, MSN, CRNA, Kara Douglas, MS, BSN, CRNA, Desiree Chappel, MSNA, CRNA, Joseph Chapman, MSN, CRNA, and the members of the Enhanced Recovery Shared Interest Group for their time, commitment, and expertise in the development of this enhanced recovery resource series.