UVA **Enhanced Recovery After Surgery (ERAS)** Protocol

A growing body of data suggests that excessive perioperative opioid utilization and over-aggressive fluid administration contribute to perioperative morbidity. Anesthetic and analgesic techniques designed to minimize opioid use, as well using a "goal-directed" fluid approach, are major components of enhanced recovery after surgery protocols. The following protocol was developed by a collaborative, interdisciplinary team in an effort to improve relevant outcomes in simple spine surgery patients.

Pre-Operative (PREOP):

Use **ERAS SPINE GENERAL** order set in clinic
MEDD calculation performed & documented in preop H&P
Clear fluids (Gatorade) up to 2 hours before induction
Multimodal analgesia

- Acetaminophen 975mg PO
- Gabapentin 600mg PO
- Celecoxib 200mg PO

\+ selection and administration of preoperative opioid by anesthesia team
IV catheter placed but *no IV fluids* given in SAS
Weight-based preop antibiotics to be administered in OR if IV push or in SAS if IV infusion (i.e. vancomycin)

Intraoperative (OR):

	Patient is opioid naïve:	Patient is opioid tolerant
Induction	1 mg/kg IV lidocaine with induction	1 mg/kg IV lidocaine AND 0.5 mg/kg IV ketamine with induction
IV Analgesia	40 mcg/kg/min lidocaine infusion	40 mcg/kg/min lidocaine infusion Ketamine: 0.25 mg/kg IV bolus for procedures <1 hour OR 5-10 mcg/kg/min IV infusion for procedures >1 hour
-NO ADDITIONAL INTRAOPERATIVE OPIOIDS (w/out attending approval) -Routine PONV prophylaxis: 4-8 mg dexamethasone prior to incision and 4 mg ondansetron prior to extubation unless contraindicated		

- Ketamine infusion *may* be used to facilitate neuro-monitoring at discretion of anesthesiologist
- Local anesthetic infiltration per neurosurgery team – Planned use of liposomal bupivacaine must be discussed during surgical time out and IV lidocaine infusion should not be used.
- NO Acetaminophen/Ketorolac (see PREOP, above)
- Tidal volumes 6-8 mL/kg to reduce ALI and minimize use of high FiO2 to prevent hyperoxia.
- Zero Balance Fluid Strategy: Consider volume replacement with albumin for EBL >500mL.

Postoperative (PACU and beyond):

- Place PACU ERAS orders using "ERAS PACU Focused" order set – select NSURG Spine panel
- 0.5-1 mg Midazolam + 10-20 mg Ketamine PRN, 5-10 mg oral oxycodone PRN if tolerating PO
- IV Opioids (i.e. fentanyl, hydromorphone) are acceptable for rescue analgesia
- **Lidocaine infusion for chronic pain patients - page APS [1593] to make aware**
- Patients will be risk stratified for VTE prophylaxis
- Ambulation after surgery

MEDD:Morphine Equivalent Daily Dose

SAS: Surgical Admission Suite

OR: Operating Room

IV: Intravenous

PO: per OS

PONV: Postoperative Nausea and Vomiting

ALI: Acute Lung Injury

EBL: Estimated Blood Loss

PACU: Post Anesthesia Care Unit

ERAS: Enhanced Recovery After Surgery

NSURG: Neurosurgery

APS: Acute Pain Service

VTE: Venous ThromboEmbolism

UVA: University of Virginia