

## Supplemental Figure 2

### ANESTHESIA BUNDLE

Element	Definition
Preoperative Testing Surgeons, residents, fellows PPE/PATA Anesthesia	<ul style="list-style-type: none"> <li>In accordance with hospital policy, all patients should receive an anesthesia preoperative phone call, or visit, per departmental guidelines, prior to the day of surgery. Anesthesia consultant will communicate any recommendations for further testing with primary surgeon's office.</li> <li>Patients with high degree of medical or anesthetic complexity as assessed by the surgeon at the preoperative visit should be referred to anesthesia for preoperative evaluation per institutional protocol via e-mail at least 7 days prior to surgery to facilitate preoperative workup</li> <li>In accordance with departmental guidelines, patients older than 65 and patients with a history of cardiac disease should have an EKG performed within 6 months of surgery</li> <li>A CBC should be performed within 90 days for patients</li> <li>Routine preoperative chest x-rays are not indicated</li> <li>Diabetic patients should have a pre-op fingerstick on day of surgery</li> </ul>
Preoperative Medication Management Surgeons, residents, fellows PPE/PATA Anesthesia	<ul style="list-style-type: none"> <li>Hold ACE inhibitors and ARBs on the day of surgery</li> <li>Take prescribed beta-blockers on the day of surgery</li> <li>Patients on long-acting narcotic therapy (e.g. OxyContin) should take their extended-release narcotic on the day of surgery</li> <li>Anticoagulation management will be at the discretion of the primary surgeon</li> <li>Vitamin/herbal supplements, and fish oil should be held 7 days prior to surgery</li> <li>Ativan PO on day of surgery per surgeon order</li> </ul>
Preemptive Analgesia Surgeons, residents, fellows CPC / pre-op Nursing Anesthesia	<ul style="list-style-type: none"> <li>Patients should receive 975mg to 1,000mg of acetaminophen orally prior to surgery</li> <li>Patients should receive gabapentin 300mg prior to surgery</li> <li>Patient SHOULD receive celecoxib 100 mg prior to surgery</li> </ul>
Intraoperative Antiemetic Prophylaxis Anesthesia	<ul style="list-style-type: none"> <li>Unless contraindicated, patients should receive antiemetic prophylaxis with at least two of the following medications administered intraoperatively:               <ol style="list-style-type: none"> <li>Zofran 4mg IV</li> <li>Haloperidol 1mg IV</li> <li>Dexamethasone 0.1mg/kg (max 8mg)</li> <li>Scopolamine patch (should not be used in patients over 65)</li> </ol> </li> </ul>
Postoperative Antiemetic Use Surgeons, residents, fellows Anesthesia PACU Nursing Floor Nursing	<ul style="list-style-type: none"> <li>The following medications are acceptable for rescue antiemetic use:               <ol style="list-style-type: none"> <li>Zofran 1-4mg IV</li> <li>Haloperidol 1mg IV</li> <li>Metoclopramide 5-10mg IV</li> <li>Promethazine 6.25-12.5mg IM</li> </ol> </li> <li>The first line rescue antiemetic given in the PACU should be a drug not given pre- or intraoperatively</li> </ul>
Intraoperative Medication Use Anesthesia	<ul style="list-style-type: none"> <li>The following medications are <b><u>NOT PREFERRED</u></b> and should be avoided if possible:               <ol style="list-style-type: none"> <li>Isoflurane</li> <li>Morphine</li> </ol> </li> <li>Fentanyl is the preferred narcotic for intraoperative use</li> <li>Total intravenous anesthesia (TIVA) is <b><u>PREFERRED</u></b>.               <ul style="list-style-type: none"> <li>TIVA should consist of Propofol and one of the following:                   <ul style="list-style-type: none"> <li>Dexmedetomidine. <b>Please turn dexmedetomidine OFF once neuromuscular blockade is allowed.</b></li> <li>Lidocaine</li> <li>Ketamine</li> </ul> </li> </ul> </li> <li>Antibiotic prophylaxis should be provided with cefazolin (unless allergic in which case</li> </ul>

	<p>an appropriate substitute should be given) within 60 minutes of incision</p> <ul style="list-style-type: none"> <li>• If a patient is to receive vancomycin, then that patient should not be the first case of the day.</li> <li>• In the absence of paravertebral blocks, multimodal analgesia should be achieved with use of two or more of the following, unless contraindicated:             <ol style="list-style-type: none"> <li>1. Ketamine 0.5mg/kg IV bolus and 5mcg/kg/min IV infusion</li> <li>2. Lidocaine 1mg/kg IV bolus and 1.5mg/kg/hr IV infusion (should not be used for patients receiving regional anesthesia)</li> <li>3. Dexmedetomidine infusion at 0.5mcg/kg/hr IV with NO intravenous bolus of dexmedetomidine administered. <b>Please turn dexmedetomidine OFF once neuromuscular blockade is allowed.</b></li> <li>4. Regional anesthetic techniques</li> </ol> </li> </ul>
<p>Neuromuscular Blockade Anesthesia</p>	<ul style="list-style-type: none"> <li>• If paralysis is needed for reconstruction, NMB may be maintained with either rocuronium, vecuronium or cisatracurium; cisatracurium is preferred in patients with renal dysfunction</li> <li>• Adequate offset of neuromuscular blockade should be ensured with either: sustained handgrip on 100 Hz tetanic stimulation of &gt;5 seconds or quantitative TOF monitor with ratio &gt;0.9 or documentation of adequate conditions for reversal (&gt;2 twitches) and appropriate dose of reversal agent per protocol.</li> </ul>
<p>Intraoperative Fluid and Ventilation Management Anesthesia</p>	<ul style="list-style-type: none"> <li>• Intraoperative fluid management should be aimed at maintaining adequate end-organ perfusion while minimizing iatrogenic volume overload</li> <li>• Hypotension alone should not necessarily be treated with fluid boluses unless other clinical signs point to hypovolemia</li> <li>• Vasopressors should be considered a first line treatment for hypotension due to induction of general anesthesia</li> <li>• Insufficient data exists for noninvasive cardiac output monitors (NICOMs) to recommend their routine use; however, clinicians may opt to use these devices to guide resuscitation in patients whose volume status is difficult to ascertain clinically. NICOMs or other measures of volume status should be used in cases where fluid administration exceeds 1600 mL of IV Fluid or EBL exceeds 500 mL.</li> <li>• Protocol:             <ul style="list-style-type: none"> <li>○ No fluids should be administered in preop holding</li> <li>○ If patients are hypotensive <u>with</u> other indicators of hypovolemia, crystalloid boluses should be given at no more than 3-5mL/kg/hr with appropriate time allowed for clinical response</li> <li>○ Colloid may be substituted for crystalloid at the anesthesiologist's/surgeon's discretion</li> </ul> </li> <li>• If a urinary catheter exists, then:             <ul style="list-style-type: none"> <li>○ Accept urine output of 0.2mL/kg/hr</li> <li>○ Do not give fluid to treat low urine output if other data imply euvoolemia</li> </ul> </li> <li>• Ventilation strategy             <ul style="list-style-type: none"> <li>○ Goal ventilation strategy should be TV of 5-7 mL/kg of IBW with PEEP ≥ 5 cm H<sub>2</sub>O</li> </ul> </li> </ul>
<p>Postoperative Analgesia Surgeons, residents, fellows Anesthesia PACU Nursing Floor Nursing</p>	<ul style="list-style-type: none"> <li>• Patients should receive <u>scheduled</u> acetaminophen 650gm PO q 6 hrs.</li> <li>• Narcotic therapy should be minimized             <ol style="list-style-type: none"> <li>1. First line rescue therapy for mild to moderate pain should be a non-narcotic such as Acetaminophen or adjustment of regional analgesia catheter</li> <li>2. Oxycodone 5-10mg PO or tramadol 50-100 mg PO are the preferred first line narcotic agents; IV narcotic therapy should be used for third line rescue use only for patients tolerating oral agents</li> </ol> </li> </ul>

Regional Analgesia

Anesthesia

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- Patients should receive paravertebral blocks prior to operations
- If patients are not candidates for paravertebral blocks, then infiltration of local anesthetic into surgical field should occur.