MASSACHUSETTS GENERAL HOSPITAL

**MGH Bariatric Surgery (ERAmbS) Pathway**
Updated 11.21.2022

Pre-Operative

| ERAS component | Description |
|---|---|
| **Pre-operative education and counseling** Surgery, anesthesia, pre-op nursing, Weight Center multidisciplinary team | Multi-modal pre-operative education, expectation setting, and weight loss counseling provided to patients prior to surgery<br>• Provide education materials to the patient that includes all components of the pathway and set expectations (including LOS, pain and nausea management, ambulation, fluid intake, diet, post-op milestones etc.).<br>• Video and other education materials will also be hosted online (in development) |
| ***Pre-operative fluid management and administration** Surgery, anesthesia | • A Full liquid diet should be followed the day before surgery until Midnight<br>• Clear liquids ok day of surgery up to 2 hours prior to induction<br>• In cases of known/diagnosed gastroparesis may tailor regimen accordingly |
| **Pre-operative Antibacterial shower** Surgery, Weight Center | • Shower/bathe with liquid Chlorhexidine wash starting 2 days before, the day before, and on the morning of surgery (i.e., once daily for 3 days) per the special instructions included for bathing with Chlorhexidine, an antimicrobial soap.<br>• If Patient was tested for STAPH and is positive, defer to instructions provided by their surgeon's office for the use of Chlorhexidine wash and mupirocin nasal ointment. Their doctor will let them know if testing is needed.<br>• The Chlorhexidine wash will be shipped to the patient's home or provided by the Surgeon's office. |
| **Pre-operative carbohydrate drink** Surgery, anesthesia | • All patients should receive a preoperative nutritional supplement drink shipped to their home or provided by their Surgeon's office prior to surgery.<br>  ○ If the above is not provided, up to 20oz of Gatorade (no red) is an acceptable alternative.<br>• Patients should be given instructions to drink the provided carbohydrate drinks starting 4 hours before and complete or stop drinking 2 hours before induction<br>• If the patient is diabetic, instruct them to follow their recommend diet and do not drink the carbohydrate drink as it may increase their blood sugar. |
| **Health optimization** Surgery, anesthesia, pre-op nursing, Weight Center multidisciplinary team | <u>Recommended</u> Pre-Habilitation practices:<br>1. Smoking (Tobacco, Marijuana, Vape, Cigar) Cessation:<br>  • At least 6 weeks prior to procedure<br>  • Consider testing compliance using: Secondhand smoke assessment, history and physical, CO testing, urinary metabolites etc.<br>  • Consider cancelling procedure if non-compliant<br>2. Alcohol Cessation<br>  • Active alcohol abuse (3 or more drinks per day; 15 or more drinks per week) is a major contra-indication<br>  • Cessation at least 1 year prior to procedure if history of abuse (per insurance requirements).<br>  • Cessation at least 2 years prior, if history of hospitalization for alcohol abuse.<br>3. Pre-op weight Loss<br>  • Tailor weight management regimen to individual patient requirements<br>  • Active attempts at weight loss in anticipation of surgery are encouraged.<br>4. Increase baseline physical activity |

| | |
|---|---|
| | • Increase physical activity from baseline for 1-3 months prior to surgery (ideally 30 minutes of aerobic or resistance training every day)<br>5. Liver-Shrinking diet<br>• Recommend a Liver-shrinking diet tailored to individual patient requirements based on established institutional best practices.<br>6. Optimizing Blood Glucose and HbA1c trends is **recommended.**<br>• Pre-op blood glucose and HbA1c testing (12 weeks before) or at pre-op evaluation clinic.<br>• Optimizing BG and HbA1c pre-operatively with the help of an endocrinologists is recommended in cases where HbA1c is > 10%<br>• Cases where HbA1c is > 10%, should have justification from attending surgeon or endocrinologist for proceeding with procedure.<br>• In the pre-op holding area<br>- All patients, diabetic or not, should have a FS or other blood glucose determination<br>- Glucose levels managed per hospital best practice<br>7. Discontinue Oral Contraceptives<br>• At least 1 month pre-operatively<br>• May restart 1-month post-operatively<br>• Consider patient education about alternative contraception methods<br>• |
| **Obstructive Sleep Apnea Screening**<br>Surgery, anesthesia, primary care physician, pulmonologist, obesity medicine physician | Obstructive Sleep Apnea screening (clinical, screening questionnaire (STOPBANG) and/or sleep study as appropriate)<br>• Optimize sleep apnea treatment (CPAP, BIPAP) if indicated |
| **Pre-op Analgesia**<br>Surgery, anesthesia | **Recommend** use of multimodal analgesia peri-operatively, with a narcotic sparing approach.<br>Pre-operative analgesic best practices may include, but are not limited to, the following:<br>1. Oral clonidine 0.1mg 45 min prior to induction. (Not recommended if patient has taken morning dose of ACE-I or ARB)<br>2. Oral Acetaminophen (Tylenol) 975-1.3g, one-time dose, 45 min -1 hr. pre-op (liquid solution)<br>a. IV Acetaminophen (Tylenol) if unable to take oral medications<br>3. Oral Gabapentin (Neurontin) (Liquid Solution) 300-600mg PO pre-op |
| **Pre- op Anti-emesis**<br>Anesthesia | A multimodal approach to post-op nausea and vomiting prophylaxis is **recommended** in high-risk patients. Oral anti-emetic agents not recommended.<br>A minimum of 2 of the following agents are **recommended**, including but not limited to:<br>1. Scopolamine transdermal patch 1.5mg (applied in pre-op; left on for 48-72 hours)<br>2. IM Hydroxyzine Hcl (Vistaril) for rescue<br>3. Dimenhydrinate (Dramamine)<br>Metoclopramide is **not recommended** for use as PONV prophylaxis, consider use only in certain conditions. |
| **Pre-op Antibiotics**<br>Surgery, anesthesia | **Pre-operative and intra-operative antibiotics for bariatric prophylaxis per institutional practice and bacterial resistance patterns (post-op antibiotics are not routinely recommended unless indicated)**<br>Antibiotic regimens used include but are not limited to:<br>1. Cefazolin Pre-op and Intra-op 2g or 3g if > 120kg (Clindamycin for allergy) |
| **Pre-op DVT Prophylaxis**<br>Surgery | Individualized DVT prophylaxis is **recommended** and should involve mechanical and pharmacological measures including LMWH or unfractionated heparin |

Intra-operative

| ERAS component | Description |
|---|---|
| Perioperative fluid management<br>Anesthesia | Recommend Zero Fluid Balance Management best practice (defined by):<br>• 5-7 ml/kg (ideal body weight) crystalloid bolus at induction, if hypotensive<br>• Crystalloid up to 2ml/kg/hr (ideal body weight) for laparoscopic cases<br>• May bolus up to 2 times with 250cc of colloid<br><br>**Fluid should be administered with the goal of normovolemia.** Post-operative fluid infusions should be discontinued as soon as practicable with preference given to use of the enteral route.<br>Consider: Reiterating patient education on adequate hydration strategies post-operatively and after discharge. |
| Skin Prep<br>Surgery, Intra-Op Nursing | 1. Site Prep: No shaving and careful use of clippers<br>2. Use Chlorhexidine-based prep preferentially (iodine or alcohol-based prep are alternatives) |
| *Airway management and ventilation strategies<br>Surgeon, Anesthesia | Recommend that a robust airway strategy must be planned and discussed with all team members during the huddle Airway management in the obese patient may be challenging.<br>• Consider using/having available video laryngoscopy.<br>• Consider having a second set of experienced hands available.<br><br>Recommended Positioning. Consider:<br>• Head Elevated/Reverse Trendelenburg Position. |
| Anesthetic<br>Anesthesia | Recommend opioid-sparing anesthetic technique when appropriate.<br>Use least lipid soluble volatile anesthetics only (i.e., Desflurane, Sevoflurane)<br><br>Recommend axillary temperature monitoring (NOT oral temp probe as stomach will be stapled)<br>Regional (or local) block with local anesthetic. Surgeon team might perform a TAP block at their discretion.<br>AND/OR<br>Lidocaine drip: 1.5 mg/kg bolus with induction then 2mg/min drip from induction to case end<br><br>Strongly recommend totally intravenous anesthesia (TIVA) for patients at high risk for PONV: female, non-smoker, history of PONV or significant motion sickness, need for postop IV or oral narcotics. |
| Glucose Monitoring<br>Anesthesia | Recommend Intra-op monitoring and management of blood glucose levels:<br>• Check fasting glucose on all patients in pre-op holding<br>• Target Blood Glucose: per best practice at site (Goal:140 – 180mg/dL)<br>• All diabetics and patients treated with insulin should have hourly intra-op glucose monitoring for extended cases<br>• Non-diabetics ≥120mg/dL Preop, re-check after 1 hour: if still ≥120mg/dL, check q1hr during surgery<br>• Glucose levels should be managed per hospital best practice<br>• Goal is to transition all patients to Sliding Scale Insulin prior to PACU discharge, if possible, with goal FBG <180mg/dL.<br>• All diabetic patients requiring insulin drip in OR have consult to endocrinology service postop |
| Normothermia<br>Anesthesia | Actively warm throughout surgery to achieve target temperature of > 36° C using one or more of the following:<br>1. IV Fluid warming device<br>2. Forced warm air over-body device<br>3. Consider pre-warming patient for 15 min with forced air (pre-op holding or pre-incision) |

| | |
|---|---|
| Intra-op Analgesia<br>Anesthesia | Recommend use of multimodal analgesia peri-operatively, with a narcotic sparing approach.<br>intra-operative analgesic best practices may include, but are not limited to, the following:<br>1. IV/IM Ketorolac (CHECK WITH SURGEON BEFORE USE)<br>2. IV Dexmedetomidine (Precedex)<br>3. Lower dose narcotics as adjunct |
| Intra-op Anti-emesis<br>Anesthesia | A multimodal approach to post-op nausea and vomiting prophylaxis is **recommended** in high-risk patients.<br>A minimum of 2 of the following agents are **recommended**, including but not limited to:<br>1. Ondansetron 4mg IV 30 minutes prior to emergence form anesthesia<br>2. Dexamethasone (Decadron) up to 8mg IV after induction<br>3. Haloperidol 1mg<br>4. IM Hydroxyzine Hcl (Vistaril) for rescue<br>5. Dimenhydrinate (Dramamine)<br>Metoclopramide is **not recommended** for use as PONV prophylaxis, consider use only in certain conditions. |
| Drains, tubes, and catheters<br>Surgery, anesthesia | Minimal use of (prefer no use) of the following is **recommended**:<br>1. NG tubes<br>• Routine use of nasogastric tube is not recommended postoperatively<br>2. Foleys and catheters<br>• Routine use of Foley and urinary catheters is not recommended<br>• Consider straight catheterization to drain bladder at end of a long case<br>• Have patient void before procedure<br>**Consider** AVOIDING the following:<br>1. Abdominal drains:<br>• Unless there is concern during procedure, or for revisions or complications. |

Post-operative

| ERAS component | Description |
|---|---|
| Post-Operative Oxygenation<br>Surgery, anesthesia | • Patients with obesity and without OSA should be supplemented with oxygen prophylactically in head-elevated 30 Degrees or semi-sitting position in the immediate post-operative period (PACU)<br>• Uncomplicated patients with OSA should receive oxygen supplementation in a semi-sitting position.<br>• A low threshold for initiation of positive pressure support must be maintained in the presence of signs of respiratory distress |
| Post-op Analgesia<br>Surgery, anesthesia, PACU nursing | Recommend use of multimodal analgesia peri-operatively, with a narcotic sparing approach.<br>Avoid oral medications in immediate post-operative period/PACU<br>Post-operative analgesic best practices may include, but are not limited to, the following:<br>1. Oral Acetaminophen (Tylenol) 975-1.3g (liquid solution)<br>2. IV Acetaminophen (Tylenol)<br>3. IV/IM Ketorolac<br>4. Oral Gabapentin (Neurontin) (Liquid Solution) 300-600mg PO<br>5. IV Dexmedetomidine (Precedex)<br>6. Lower dose narcotics as adjunct |
| Post- op Anti-emesis<br>Surgery, anesthesia, PACU nursing | A multimodal approach to post-op nausea and vomiting prophylaxis is **recommended** in high-risk patients. Oral anti-emetic agents not recommended.<br>A minimum of 2 of the following agents are **recommended**, including but not limited to:<br>1. Ondansetron 4mg IV<br>2. Dexamethasone (Decadron) up to 8mg IV<br>3. Haloperidol 1mg<br>4. Scopolamine transdermal patch 1.5mg (if applied in pre-op; left on for 48-72 hours) |

| | |
|---|---|
| | 5. IM Hydroxyzine Hcl (Vistaril) for rescue<br>6. Dimenhydrinate (Dramamine)<br>7. Lorazepam (Ativan)<br>Metoclopramide is **not recommended** for use as PONV prophylaxis, consider use only in certain conditions. |
| **Non-invasive positive pressure ventilation**<br>Surgery, anesthesia, PACU nursing | • Prophylactic routine post-op CPAP **not recommended** in Obese patients without OSA.<br>• CPAP therapy considered in patients with BMI > 50, severe OSA or O2 Sat <90% on O2 supplementation<br>• Obese patients with OSA on home therapy, recommend that they bring their equipment with them when coming in for surgery. They should use their equipment in immediate post-op period (PACU) |
| **Early Mobilization**<br>Surgery, PACU nursing, floor nursing | **Recommend** promotion of early mobilization upon arrival to the floor:<br>• 2 hours after arrival to floor, unless contraindicated (patient appears drowsy, unstable on feet)<br>• If unable to mobilize, reassess every 1 hour until able to mobilize<br>• Goal: ambulating in hall POD 1, recommend ambulation at least 2-3 times per nursing shift |
| **Early Diet Advancement**<br>Surgery, floor nursing | **Recommend** promotion of early diet advancement upon arrival to floor:<br>• Take all essential meds (beta blockers, psych meds etc.) on POD-0 or POD-1 (as per site practice)<br>• Tailor diet to individual patient<br><br>POD-0 (night of surgery):<br>• Ice chips or Sips (up 60cc/hour) of stage 1 clear liquid (non-carbonated, no-sugar added) as tolerated, or unless contraindicated or PONV.<br><br>POD-1: Advance to stage-1 clear liquids ad-lib |
| **Early Postoperative Nutrition**<br>Surgery, floor nursing | **Recommend** Protein intake should be monitored.<br>• Postoperative glycemic and lipid control has to be strict in patients with diabetes<br>• POD-0: Sips of Stage 1 Clear Liquids (non-carbonated, no-sugar added)<br>• POD-1: Stage 1 Clear Liquids (non-carbonated, no-sugar added) ad-lib<br>• POD-2: Stage 2 liquids (full liquids)<br>• Advance diet within 2 weeks as outpatient<br>• Intake Goal: 60oz TOTAL per day (at least 24oz full liquids + 24oz clear liquids) |
| **Glucose control**<br>Surgery, PACU nursing, floor nursing | Recommend post-operative monitoring and control of blood glucose.<br>• Target Blood glucose levels: Goal is to transition all patients to Sliding Scale Insulin prior to PACU discharge, if possible, with goal FBG <180mg/dL.<br>• Frequency of Checking: Q4 hours post-op<br>In PACU<br>• All patients should have a FS or other blood glucose determination<br>• Non-diabetic patients with a glucose level <120mg/dl may have glucose monitoring discontinued<br>• All diabetic patients and any patients with glucose levels >120mg/dl who do not carry a DM diagnosis should have ongoing blood glucose testing (e.g., an order for q4hr finger sticks +/- sliding scale insulin)<br>• Any patient with Type 1 diabetes and/or insulin drip in OR should consider input from endocrine<br>On the inpatient units<br>• The goal should be to keep glucose below 140mg/dl |

| | |
|---|---|
| **DVT prophylaxis**<br>Surgery, floor nursing | Individualized DVT prophylaxis is **recommended** and should involve mechanical and pharmacological measures including LMWH.<br>1. Dosing and duration of treatment should be tailored for each patient<br>2. Consider extended thromboprophylaxis in patients with history of previous DVT, Family history, impaired mobility, high BMI> 60, abnormal hyper-coagulopathy panel<br>Pharmacological measures during post-op hospital stay may include the following:<br>1. LMWH e.g., Enoxaparin (Lovenox) 30 and 40mg BID options<br>2. Heparin (sub-cutaneous)<br>Pharmacological measures during extended post-op recovery at home include:<br>1. LMWH e.g., Enoxaparin (Lovenox) 40 – 100mg BID (or QD)<br>Recommend Patient education on adequate hydration and mobility to avoid DVT |
| **Discharge criteria**<br>Surgery, floor nursing | Recommend defined discharge criteria, that a patient must meet prior to being discharged, including the following:<br>1. Heart Rate: Not tachycardic <100bpm (from baseline)<br>2. PO Intake: Tolerating PO Intake; at least 500cc since operation<br>3. Hematocrit levels: Stable hematocrit; If >6-point drop in the morning, then recheck<br>4. Pain: well-controlled |
| **Home orders and patient instructions**<br>Surgery, floor nursing | Recommend a suite of home orders post-discharge to maximize recovery, including the following:<br>• Patient diaries<br>• Pain and PONV Control<br>• Diet<br>• Fluid Intake<br>• Contact for questions for problems (HELP CARD)<br>• Other Medications |
| **Patient Follow-up**<br>Surgery | Recommend Post-discharge best practices and pre-discharge patient education for providers to maximize recovery and minimize readmissions, including:<br>• Post-discharge phone calls within 24-48 hours of discharge<br>• Pre-discharge education or Phone calls will cover the following domains:<br>1. Fluid intake<br>2. PONV<br>3. Pain control<br>4. Bowel movements<br>5. Diet<br>6. Medications<br>7. Mobility and avoiding DVT |