

*Johns Hopkins Medicine  
Department of Anesthesiology  
and Critical Care Medicine*



# Center for Perioperative Optimization

## PREOPERATIVE ROADMAP

For Providers Requiring Anesthesia Services

July 2021

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## Preoperative Assessment Roadmap

This summary will provide all surgeons and other providers who require anesthesia services guidance to understand the process by which we hope to facilitate the best possible care for your patients. Following these directions should help ensure your patients are not cancelled or delayed the day of surgery. Your patients will receive the Preoperative Screening Questionnaire (Appendix A) via My Chart as soon as their surgery is posted. Instruct your patients to complete asap as this will generate a risk score that helps you with decision making regarding where their Preoperative Assessment should take place (with the surgeon or PCP; with Center for Perioperative Optimization (CPO) formerly PEC as an Anesthesia Consult or as an Anesthesia NP/PA visit). For all cases scheduled for surgery (or cases you are considering for surgery), please follow the following process:

1. **TRIAGE:** Completion of the Preoperative Screening Questionnaire is essential as it relates to triage of patients preoperatively regarding optimization and appropriate scheduling (OR site and Post op disposition). The Questionnaire will generate one of the below risk scores:
  - **RED:** Qualifies for In Person CPO appointment for Preoperative Evaluation\*
    - Consider Anesthesia Consult appointment for those patients with multiple co-morbidities and for higher risk surgery
  - **YELLOW:** Qualifies for NP/PA visit (Video or In Person) for Preoperative Evaluation\*
  - **GREEN:** Visit with PCP or Surgeon for Preoperative Evaluation\*\*

\*All appointments must be scheduled at least 48 hours prior to patient's surgery to allow for timely evaluation

\*\* The Preoperative H&P is required within 30 days of surgery

2. **JHOC OUTPATIENT CASES** Please review the exclusion criteria for scheduling your patients in JHOC (Appendix B).
3. **TESTING AND INSTRUCTIONS** Follow the Preoperative Testing Guidelines to determine what laboratory studies and additional tests are required; as well as what medications to hold on the day of surgery, and NPO guidelines. When sending patients to the CPO for their preoperative assessment, the CPO practitioners will order appropriate laboratory testing. If you would like specific testing done, please include this request in the display notes of the CPO schedule and enter these orders in Epic. Please only order lab studies that you want, and not ones that you think Anesthesia will want. This will help eliminate unnecessary lab studies and minimize confusion regarding required lab work.
4. **OUTSIDE STUDIES** If outside facilities are utilized to generate lab studies, other diagnostic tests, or consultation reports, please obtain these results and scan them into Epic so they are available for review. Additionally, the patient should be instructed to bring copies of these results with them to CPO or the OR on the day of the procedure. For every patient requiring an ECG, please inform them to obtain a copy of a previous ECG for comparisons.
5. **PEC REVIEW OF OUTSIDE EVALUATION** Patients that do not require a CPO visit may still have reports or diagnostic tests, as well as H&Ps that should be made available 72 hours prior to surgery. This will allow a review of their findings preoperatively, and determinations made regarding fitness for procedures. Please scan these documents into Epic.

Please instruct your patients that they will be contacted the day prior to their surgery (Friday for Monday surgery) by a nurse from the Preop area to update their medication list and to relay general preoperative information to your patients. Make certain your patients have valid phone numbers in Epic as to where they may be contacted during the day.

## Risk Stratification

- **Low Risk Medical Conditions** – Healthy with no medical problems (ASA I) or well controlled chronic conditions (ASA II)
- **High Risk Medical Conditions** – Multiple medical comorbidities not well controlled (ASA III) or extremely compromised function secondary to comorbidities (ASA IV)
- **Low Risk Surgical Procedure** – Poses minimal physiological stress (ex. – outpatient surgery)
- **Intermediate Risk Surgical Procedure** – Medium risk procedure with moderate physiological stress and minimal blood loss, fluid shifts, or postoperative changes
- **High Risk Surgical Procedure** – High risk procedure with significant fluid shifts, possible blood loss, as well as perioperative stress anticipated. Anticipated ICU stays postoperatively

**Medical Conditions that may warrant an ASA III or IV status, and would benefit from a Preoperative Assessment at the CPO:**

### General Conditions:

- Medical Condition inhibiting ability to engage in normal daily activity – unable to climb two flights of stairs without stopping
- Medical Condition necessitating continual assistance or monitoring at home within the past six months
- Admission to hospital within past two months for acute or exacerbation of a chronic condition
- History of previous serious anesthesia complication or history of Malignant Hyperthermia

### Cardio-circulatory:

- History of angina, coronary artery disease or myocardial infarction
- Symptomatic arrhythmias, particularly new onset A-Fib
- Poorly controlled hypertension (systolic > 160 and/or diastolic > 100)
- History of congestive heart failure
- History of significant valvular disease (aortic stenosis, mitral regurgitation, etc)

### Respiratory:

- Asthma/COPD requiring chronic medication or with acute exacerbation and progression within past six months
- History of major airway surgery or unusual airway anatomy (History of difficult intubation in previous anesthetic)
- Upper or lower airway tumor or obstruction
- History of chronic respiratory distress requiring home ventilatory assistance or monitoring

### Endocrine:

- Insulin dependent mellitus
- Adrenal disorders
- Active thyroid disease
- Morbid obesity

**Neuromuscular:**

- History of seizure disorder or other significant CNS diseases (multiple sclerosis, muscular dystrophy, etc.)
- History of myopathy or other muscular disorders

**Hepatic/Renal/Heme:**

- Any active hepatobiliary disease or compromise (hepatitis)
- End stage renal disease (dialysis)
- Severe anemias (Sickle Cell, Aplastic, etc.)

**Obese/Obstructive Sleep Apnea**

- BMI>35 with poor functional capacity (unable to achieve 4 METS = 2 flights of stairs or 4 city blocks)
- OSA associated with high incidence of respiratory failure post anesthesia
- Please complete the STOP-BANG scoring of your patient (Appendix C) to assess risk of OSA

**Preoperative ECGs:**

**All surgery:** Required within 30 days only for anyone with recent changes in functional status, new or unstable angina, or progressive dyspnea.

- **Low risk surgery** (such as cataracts, endoscopy, superficial procedures or angio) – None required except as noted above. Please forward copy of the most recent, old, EKG you may have on file.
- **Intermediate risk surgery** – Required within 6 months for anyone with history of coronary heart disease, other significant structural heart disease such as arrhythmias, valvular disorders, peripheral vascular disease, cerebrovascular disease, insulin dependent diabetes, chronic kidney disease (creatinine > 2 mg/dL.), or extremely poor functional capacity.
- **High risk surgery** – Required within 6 months for anyone with anticipated ICU postop. Also, anyone with a history of diabetes, hypertension, morbid obesity, HIV, ESRD or poor functional capacity.

## Preoperative Testing Guidelines

In an effort to reduce unnecessary testing, we are recommending utilizing the following approach:

**For all patients scheduled for low or intermediate risk surgery, only the following labs are necessary:**

- Hb/HCT on any menstruating female. For minor procedures on healthy patients, we may be able to check Hb the morning of surgery.
- Urine pregnancy test on the morning of surgery for any menstruating female.
- ECG on any patient described above in ECG Recommendations, unless we are provided with a previous tracing within six months.
- No CxR indicated unless a history of pleural effusion or current URI with fever.
- No PT/PTT unless a patient or family history of bleeding or easy bruising. If ordering these tests, only order the PT, not PTT (reserved for patients on Heparin).

This approach is only applicable on patients who have no significant comorbid conditions (ASA I or II). Any presence of significant medical conditions may require **additional testing**, and specific guidance is provided in Preoperative Guidelines on each condition. General guidelines listed below can be used to determine appropriate preoperative tests. **To help facilitate a more efficient evaluation at the CPO visit, we recommend obtaining these tests prior to the patients visit with the CPO.**

- **Diabetes** – Fasting BMP; ECG for all patients with evidence of end organ damage or compromised exercise capacity. We also recommend HgA1C to assess control of diabetes (see Appendix E).
- **HTN of 5 yrs. duration and/or requiring two or more meds; or Cardiac Dx** – CBC; BMP; ECG; consider ECHO, Stress Test, and/or Cardiac evaluation if symptoms significant and no previous studies within one year.
- **COPD** – PFTs if symptoms are significant; including home O2 or shortness of breath with exertion.
- **Anemia and/or Bleeding Hx** – CBC; Consider PT. Auto-donors need to have Hb/Hct post donation.
- **Liver dysfunction or Malnutrition** – CMP, CBC. Consider PT/INR.
- **High Surgical Risk Procedures** – CBC; CMP; Consider ECHO, Stress Test, and/or Cardiac evaluation if medical condition warrants, and no previous studies within the past year.
- **Poor Exercise Tolerance** – CBC; CMP; ECG; PMD evaluation; Consider ECHO, Stress Test, and/or Cardiac evaluation if no previous studies within the past year.
- **Morbid Obesity** – CBC; CMP; ECG; Consider ECHO, Stress Test, and/or Cardiac evaluation if poor exercise tolerance, and no previous studies within the past year.
- **End Stage Renal** (dialysis and/or renal failure patients) – Post dialysis labs to include CBC, post-dialysis labs; Hemoglobin and BMP at a minimum; Na/K morning of surgery.
- **Pacemakers and AICDs** (Full Guidelines in Appendix G)
  - Must be interrogated at JHH and have report in Epic.
  - Patients with pacemakers must be interrogated **within 6 months** of surgery.
  - Patients with AICDs must be interrogated within **3 months** of surgery.
  - To schedule the interrogation, please refer to Appendix G.
  - Exceptions are those patients scheduled for EGD/colonoscopies/procedures that do NOT use bovie; these procedures do not require any changes to the pacemaker or AICD.
  - If there is any change to the date/time of where the surgery is being performed after the interrogation has been done, please inform the Device Clinic.
- For patients with **cardiac stents**, **PLEASE** continue 81 mg ASA up to day of surgery (see Appendix H).
- **Type & Cross/T&S** must be done at Hopkins within 30 days of surgery. Must meet two criteria to qualify as 30 day sample: no transfusions or pregnancy within past 3 months and date of surgery. Please refer to our [web site](#) or Appendix I for which cases require T&S.

## Preoperative Medications

As a general rule, for patients scheduled for surgery with anesthesia, we recommend all medications should be continued on the day of surgery to be taken with a sip of water prior to coming to the hospital. Exceptions to this recommendation are summarized below:

CLASS OF MEDICATIONS	MEDICATION	RECOMMENDATIONS
SGLT2 Inhibitors	Cangliflozin (Invokana), Dapagliflozin (Farxiga), Empagliflozin (Jardiance), Ertugliflozin (Steglatro) and these meds combined with Metformin into one medication	For <b>all surgeries</b> : empagliflozin, canagliflozin, dapagliflozin should be stopped 3 days prior to surgery. For ertugliflozin it should be 4 days  *if unable, monitor serum/urine ketones intra and post op
Oral Hypoglycemic Agents	Metformin/GlucoPhage Actos/ Glyburide/ Tolinase/ Avandia/ Amaryl/ all others	Hold at least 8 hours pre-op. Recommend holding am dose, day of surgery.
Diuretics	Lasix/HCTZ	Hold am day of surgery, <u>unless</u> prescribed for CHF – these patients should take their <b>am dose of diuretics</b> .
ACE/ARB	Lisinopril/Lotrel/Captopril/Lotensin/ Monopril/ Prinzide/ Atacand/ Benicar/ Diovan/ Avalide / Losartan	Hold am of surgery for all patients.
Insulin	Lantus, Levemir, Humulin, Novalog, Humalog, etc.	See Appendix E for recommendations regarding Insulin.
Prescription Blood Thinners	Plavix, Brilinta, Warfarin/Coumadin, Pradaxa, Xarelto, Eliquis, Effient, Aggronox, Pletal, Lovenox, etc.	Decision when to stop preop is made between the surgeon and the physician prescribing the medication.
All Herbal and Alternative Supplements		Stop all Herbal/Alternative Supplements and preparations containing Vitamin E one week prior to surgery.

**\* In particular, it is very important for patients to take their am dosage of the following medications:**

- Beta blockers and any antiarrhythmics such as Digoxin or Calcium Channel blockers.
- Asthmatic medications including daily, rescue and as needed inhalers, Advair, Singulair and/or steroids.
- GERD medication.
- Statins such as Lipitor, Zocor, Crestor, etc.
- Aspirin – stop as instructed by your surgeon, UNLESS you have heart stents. IF you have cardiac stents, please continue ASA 81 mg through day of surgery.
- ACE/ARB – If patient has history of hypertension difficult to manage, you should instruct the patient to not take these medications the morning of surgery; however, please bring the medication with them to the hospital in the prescription bottle.

**Please advise patients to take these medications with a sip of water prior to coming to the hospital.**

**Refer to Appendix J: Medication Use Before Surgery**

## NPO Guidelines

### ADULT FASTING INSTRUCTIONS PLEASE READ BEFORE DAY OF PROCEDURE

Please note, patients are normally told to arrive **2 hours prior to their surgery start time**. If you have not yet been given your surgery start time, please contact your surgeon's office.

#### Clear Liquids



#### THE ONLY CLEAR LIQUIDS ALLOWED ARE:

- Water
- Gatorade®
- CLEAR Apple Juice (no pulp or cider)

**NO other clear liquids allowed including alcohol**

**\*See Exceptions Below**

#### STOP 1 hour before you are told to arrive at the hospital:

- You may **ONLY** have a total of 20 ounces of allowed clear liquids between midnight and 1 hour prior to your arrival
- You may **ONLY** have 8 ounces of allowed clear liquids in the last hour you are allowed to drink

\*

#### ALL other foods and non-clear liquids



All solid food, all liquids you are unable to see through, all candy, chewing gum and mints

**\*See Exceptions Below**

#### STOP 8 hours before you are told to arrive at the hospital



#### Exceptions:

- Patients with **End Stage Kidney Disease**, scheduled for a **kidney transplant**, have **gastroparesis** (slow emptying of the stomach) or if you are **pregnant** - CLEAR LIQUIDS MUST STOP SIX (6) HOURS BEFORE YOU ARE TOLD TO ARRIVE AT THE HOSPITAL
- If you are having surgery under the **Enhanced Recovery After Surgery (ERAS)** protocol, please disregard these instructions and follow the instructions given to you by your surgeon
- If your surgeon has instructed you to stay on a clear liquid diet prior to day of surgery, follow your surgeon's instructions and avoid all food and non-clear liquids

If you have any questions, call the Center for Perioperative Optimization at 410-955-8533; Monday-Friday 7:30AM- 4:00PM

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**Appendix A: Preoperative Screening Questionnaire**

## Pre-operative Screening Questionnaire

Question	Response options
Have you ever been told it was difficult to place a breathing tube in your airway (Difficult Intubation)?	Yes/No
Have you ever been told you have or are at risk for Malignant Hyperthermia or have a blood relative with Malignant Hyperthermia?	Yes/No
In the past 18 months, have you been evaluated by a primary care physician?	Yes/No
In the past 6 months, have you spent one or more nights in a hospital, or needed to go to an emergency room?	Yes/No
In the past 3 months, have you had increased shortness of breath, chest pain, dizziness, fatigue or palpitations?	Yes/No
Do you experience chest pain or shortness of breath walking up a flight of stairs or walking 4 blocks?	Yes/No
Do you get short of breath if you lay flat, or use just one pillow for 30 minutes?	Yes/No
Have you ever had a Heart Attack?	Yes/No
Do you have a Pacemaker or Implanted Defibrillator?	Yes-Pacemaker/Yes-Implanted Defibrillator/No
Do you ever use oxygen at home?	Yes/No
Do you use an inhaler almost every day to help you breathe?	Yes/No
Have you been instructed to use CPAP/BiPAP or ever been told you need a sleep study?	Yes/No
Are you on Dialysis?	Yes/No
Do you use insulin for Diabetes?	Yes/No
Are you under the regular care of a hematologist?	Yes/No
Do you take a prescription Blood Thinner?	Yes/No
Are you under the regular care of a neurologist?	Yes/No
Do you weigh over 300lbs?	Yes/No

### Appendix B: Exclusionary Criterion for JHOC

**These conditions preclude scheduling your outpatients in JHOC:**

1. Inpatients are excluded; with the exception of those inpatients who will be discharged from the hospital prior to the OR procedure, and who will be discharged to home following their operative procedure.
2. Patients in whom there is a reasonable chance of requiring administration of blood products are excluded.
3. All ventilator dependent patients are excluded.
4. Patients with moderate to severe Pulmonary Hypertension (RVSP by echocardiogram 50mmHg or greater) are excluded.
5. Any case where the patient would require intra-operative invasive monitoring devices are excluded.
6. Patients with severe cardiac valvular heart disease, as defined by the American Heart Association, are excluded.
7. Patients with a Ventricular Assist Device (VAD) are excluded.
8. Patients receiving supplemental home oxygen therapy or who have a left ventricular ejection fraction (LVEF) <30% by echocardiogram may be scheduled if having very minor surgery; however must be seen in the CPO for determination of appropriateness.
9. Patients less than 15 years of age, are excluded. However, exceptions may be made at the discretion of the Medical Director of Perioperative Services or designee, on a case by case basis, as special exceptions. Please refer to the "Child Centered Care Guidelines".
10. Patients with a BMI  $\geq$  50 are excluded.
11. Patients with OSA or those with a high risk of OSA will be allowed to be done in JHOC; however if a room air trial is not successful, these patients must be transported to the main hospital PACUs for extended recovery.
12. Patients scheduled for Airway Surgery with BMI >40, significant or uncontrolled GERD, significant neuro/musculoskeletal diseases such as MG/ musculodystrophy/ mitochondrial diseases/ congenital airway syndromes, significant active pulmonary disease: COPD/ asthma/ pulmonary fibrosis/ home O<sub>2</sub>, active cardiac disease: CAD/ Aortic stenosis/ cardiomyopathy/ pulmonary HTN

Updated, Feb 2021

## Appendix C: Special Considerations

1. **Patients receiving Hemodialysis:** These patients must have their dialysis done the day prior to scheduled surgery or the surgery may be cancelled. If the patient's regular dialysis day falls on the day of surgery, work with the patient's dialysis center to arrange for the patient's session to be moved to the day before surgery. We are being strongly discouraged from using Sunday dialysis, since this requires a hospital admission that is now primarily being denied. If at all possible, please avoid Monday surgery on patients with a Monday dialysis schedule. In addition to the issue of the need for Sunday dialysis before Monday surgery is the similar need for routine dialysis on a holiday the day before surgery. Both dilemmas need to be worked out with the dialysis center or there must be a change in the day of surgery.
2. **Patients with Pulmonary Hypertension:** These patients should see their cardiology/pulmonary specialist preop and be seen in CPO to assess need for Cardiac Anesthesia. Please note that JHOC excludes patients with RVSP (Right Ventricular Systolic Pressure) that is greater than 50.
3. **Patients with Myasthenia Gravis:** These patients should always be first case and should be instructed to take their Mestinon medication the morning of surgery.
4. **Patients with a Transplant having non transplant surgery:** Assure that the patient's transplant team is aware the patient is having surgery.
5. **Patients who are Jehovah's Witness:** PING "Jehovah's Witness JHH Bloodless" to alert the team well before day of surgery for planning purposes.
6. **Patient with Hematologic Disorders:** Some Hematologic diseases require specific treatments prior to surgery or on the morning of surgery before proceeding. Planning for this is extremely important so make sure patients with Hematologic disorders see their Hematologist prior to surgery for optimization and recommendations.
7. **Patients who are under the Guardianship of the Department of Social Services (DSS):** Whether pediatric or adult, these patients require separate consents for both their surgical procedure and their anesthesia. These consents require signatures from the patient's authorized DSS Representative and must be secured before the actual day of surgery.
8. **Patients with pacemakers:** All patients with pacemakers must be seen in our Pacer Clinic prior to surgery. Please attempt to schedule these visits on the same day as the CPO visit. This is NOT required if not using bovie; or using bipolar bovie (see Appendix G).
9. **Any patient with a Pheochromocytoma:** These patients should all be scheduled as an Anesthesia Consult more than 48 hours prior to surgery.
10. **Any patient scheduled for HIPEC Surgery:** These patients should all be scheduled as an Anesthesia Consult more than 48 hours prior to surgery.
11. **Patients on Methadone:** All patients taking Methadone need to take their am dose of Methadone on the day of surgery. We strongly recommend these patients get an appointment in the Pain Clinic prior to surgery (see Appendix K).

**Appendix D: OSA Screening**

**Have you ever been diagnosed with Obstructive Sleep Apnea (OSA) by undergoing a sleep study or Polysomnogram?** YES NO

If YES, were you prescribed a CPAP or a dental device? YES NO

If you answered YES to BOTH of the above, SKIP the following questionnaire. Otherwise, please answer the questions below

**Snoring?** YES NO  
Do you **Snore Loudly** (louder than talking or loud enough to be heard through closed doors)?

**Tired?** YES NO  
Do you often feel **Tired, Fatigued, or Sleepy** during the daytime?

**Observed?** YES NO  
Has anyone **Observed** you **Stop Breathing** during your sleep?

**Pressure?** YES NO  
Do you have or are being treated for **High Blood Pressure**?

**Body Mass Index more than 35?** YES NO

**Age older than 50?** YES NO

**Neck size large?** YES NO  
Do you have a **Neck that Measures** more than 16 inches / 40 cm around (measure at Adam's Apple)

**Gender = Male?** YES NO

Low risk of OSA: Yes to 0-2 questions **STOP-BANG SCORE** / 8  
Intermediate risk of OSA: Yes to 3-4 questions  
High risk of OSA: Yes to 5-8 questions.

CHECK if you have any of the following medical problems

- Asthma or COPD/Emphysema
- Heart Failure
- History of stroke
- I currently smoke
- Atrial Fibrillation
- Peripheral Vascular Disease
- Muscular dystrophy / Myasthenia
- I have had pain for  $\geq 3$  months for which I take opioid medications at least every other day

*Chung F et al. Anesthesiology 2008; 108: 812-821, and Chung F et al Br J Anaesth 2012; 108:768-775.*

**General Considerations for the Diabetic Patient:**

- Schedule insulin-dependent diabetic patients early in the day (by noon). If unable, please have patient arrive at hospital by 9 am regardless of the time of their surgery. Instruct the patient to bring their Glucometer with them. The patient likely will not be able to be taken back to the PREP area any earlier but is safer to be at the hospital if they were to develop symptomatic hypo/hyperglycemia.
- Preoperative evaluation may include the level of glycemic control, i.e., by blood glucose (BG) levels and glycosylated hemoglobin A1c. Patients with an A1c > 8.5% may benefit from further evaluation prior to elective surgery to reduce surgical site infections.
- Optimal intraoperative BG level: 180 mg/dL or less
- Have the patient take BG at bedtime, if > 180 mg/dL take insulin according to patient’s individualized instructions.
- Elective cases should be postponed in patients with fasting BG>400 mg/dl or in patients with significant complications of hyperglycemia such as severe dehydration, ketoacidosis, and hyperosmolar non-ketotic states. Postponing elective cases is always up to the discretion of the provider.
- See table 1 below for guidelines regarding oral diabetic medication and non-insulin injectables
- See table 2 on next page for guidelines regarding insulin and insulin pump management

**Table 1 Pre-Operative Guidelines for Diabetic Oral Medications and Non-Insulin Injectables**

Type of Medication (non-inclusive list)	DAY & EVENING BEFORE Surgery	MORNING of Surgery
<b>Special Precautions</b> <ul style="list-style-type: none"> <li>• <i>SGLT2 Inhibitors:</i> empagliflozin (Jardiance), canagliflozin (Invokana), dapagliflozin (Farxiga), **Ertugliflozin (Steglatro)</li> <li>• <i>SGLT2 Inhibitors in combination:</i> Invokamet, Xigduo XR, Qtern, Qternmet, Synjardy, Trijardy, Glyxambi, **Stegluromet, **Steglujan</li> </ul>	<p><b>Empagliflozin, Canagliflozin, Dapagliflozin and their combinations should be stopped 3 days prior to surgery.</b></p> <p><b>**Ertugliflozin and its combinations should be stopped 4 days prior</b></p> <p>Advise patients to check their FBS each morning and follow a strict ADA diet during this time to avoid hyperglycemia. Instruct them to reach out to their prescribing physician for guidance if they develop hyperglycemia approaching 300</p>	<p>Hold</p> <p><i>If unable to stop SGLT2 inhibitor within recommended timeframe prior to surgery, monitor for euglycemic ketoacidosis, especially in major surgeries (cardiothoracic/abdominal/pelvic). Consider serum CO2, serum/plasma ketones, and/or ABG/VBG in post-op period as warranted.</i></p>
<b>Oral Agents</b> (examples, not -inclusive) <ul style="list-style-type: none"> <li>• <i>Biguanides:</i> metformin (Glucophage)*</li> <li>• <i>Sulfonylureas:</i> glyburide (DiaBeta, Glynase), glimepiride (Amaryl), glipizide (Glucotrol)</li> <li>• <i>Alpha glucosidase inhibitors:</i> acarbose (Precos), miglitol (Glyset)</li> <li>• <i>Thiazolidinediones:</i> pioglitazone (Actos)</li> <li>• <i>Meglitinides:</i> nateglinide (Starlix), repaglinide (Prandin)</li> <li>• <i>DPP-4 Inhibitors:</i> Sitagliptin (Januvia), alogliptin (Nesina), saxagliptin (Onglyza), linagliptin (Tradjenta)</li> <li>• <i>GLP1 agonist:</i> semaglutide (Rybelsus)</li> </ul>	<p>Continue to take.</p> <p>*If the patient has renal dysfunction or is likely to receive IV contrast, you may want to discontinue metformin 24-48 hours prior to surgery.</p>	<p>Hold</p>
<b>Non-insulin injectables</b> <ul style="list-style-type: none"> <li>• <i>GLP 1 analogs:</i> exenatide (Byetta, Bydureon), liraglutide (Victoza), dulaglutide (Trulicity), semaglutide (Ozempic), lixisenatide (Adlyxin)</li> <li>• <i>Amylin analogs:</i> pramlintide (Symlin)</li> </ul>	<p>Continue to take.</p>	<p>Hold</p>

Table 2 Pre-Operative Guidelines for Insulin and Insulin Pumps (non-inclusive list)

Type of Insulin	DAY & EVENING BEFORE Surgery	MORNING of Surgery
<b>Short/rapid- acting Insulin</b> Ex: insulin aspart (Novolog), rapid-acting aspart (Fiasp) insulin lispro (Humalog, Admelog), glulisine (Apidra), regular insulin (Novolin R, Humulin R)	Maintain usual meal plan & insulin dose.	Hold.
<b>Intermediate-Acting Insulin</b> (taken twice daily) Examples: Novolin-N, Humulin-N (NPH),	Take usual morning dose and 75% of the usual evening dose.	Take 50% of the usual morning dose.
<b>Concentrated Insulin</b> Regular U-500 Insulin (Humulin R U-500)	Maintain usual insulin dose	Take 50% of usual morning dose if AM glucose >200
<b>Long-Acting Insulin</b> Examples: glargine (Lantus, Basaglar), detemir (Levemir), U300 glargine (Toujeo), degludec (Tresiba) <b>GLP-1/Insulin Combinations</b> Soliqua (insulin glargine + lixisenatide), Xultophy (insulin degludec + liraglutide)		
➤ <b>Taken once daily in the morning</b>	Take usual morning dose.	Take 50% of the usual morning dose.
➤ <b>Taken once daily in the evening</b>	Take 75% of the usual evening dose.	Do not take any insulin.
➤ <b>Taken twice daily</b>	Take usual morning dose and 75% of the usual evening dose.	Take 50% of the usual morning dose.
<b>Pre-Mixed Insulins</b> (ex. 70/30; 75/25; 50/50) (taken twice daily)	Take usual morning dose and 75% of evening dose.	Hold if fasting glucose AM of surgery is <200 OR Take 50% of the usual morning dose if glucose >200 AM of surgery
<b>Insulin Pump without integrated continuous glucose monitor</b> OR <b>Insulin pumps +integrated CGM and a threshold suspend for hypoglycemia feature (Medtronic 530g+Enlite, Medtronic 630 g+Guardian3, Medtronic 670g+Guardian 3 in manual mode, Tandem T-slim+Dexcom)</b>	Maintain usual meal plan & basal rate.	Maintain basal rate OR 1.if fasting glucose >or equal to 120mg/dL, maintain basal rate 2.if fasting glucose <120mg/dL, set temporary basal to 80%
<b>Insulin pump + integrated CGM with hybrid closed loop technology</b> (ex. Medtronic 670G in auto mode, Tandem + Dexcom with Control IQ)	Maintain usual meal plan and basal Rate/auto mode until NPO period Begins	During NPO period, set temp Target to 150mg/dL (8.3mM)

- ❖ All patients with insulin pumps should be referred to CPO and advised to communicate with their endocrine provider for perioperative insulin recommendations that include
  - Information regarding glycemic control and current insulin regimen, including basal rates, insulin:carb ratio and correction factor/insulin sensitivity factor), made available in patient’s EPIC record or scanned to Media.
  - Recommendations for dosing of long-acting basal insulin injection prior to turning off pump and correction factors for hyperglycemia, in setting of cases in which pump will likely be disconnected for extended time, based on length of case and recovery from anesthesia or other indications, request
- ❖ Provide patient with Perioperative Checklist for Insulin Pumps, appendix F (following page)

**Appendix F: Perioperative Checklist for Patients with Insulin Pumps Only****Weeks in advance of surgery**

- Discuss with your surgeon that you use an insulin pump
- Inform endocrinologist/primary diabetes prescriber of your upcoming surgery, please ask their recommendations for the following:
  - 1) Appropriate basal rates given your limited oral intake the day of surgery
  - 2) if your pump needs to be turned off for an extended period, recommended dosing for long-acting basal insulin injection to give prior to turning off your pump and correction factors for hyperglycemia
- If you use a continuous glucose monitor and will be hospitalized after surgery, please be aware that insulin dose recommendations will be made on basis of our hospital calibrated glucometers
- Please be aware that the hospital policy indicates U-100 concentration insulin should be used for any hospitalized patient with an insulin pump
- You will be able to use your home insulin at the time of admission until that insulin depletes from your pump, subsequently hospital-supplied insulin will be used

**Within 8-24 hours of surgery:**

- Please refill the pump reservoir, change the infusion set and replace the battery
- Ensure the infusion set or continuous glucose monitor is not near the surgical field, move if necessary

**Morning of surgery**

- Bring extra set of pump supplies (infusion set, reservoir, and insulin) in addition to your glucometer and your long-acting insulin pen, if prescribed by your diabetes provider
- Take your blood sugar upon awakening, if low, okay to have apple juice, OMIT breakfast
- Please be prepared to provide information regarding your pump, settings (basal rates/boluses) and type of insulin
- To avoid any delays in the start of your procedure, please arrive no later than 9am, or earlier if directed by your surgeon's office, so that you can monitor your glucose levels in the waiting room and have access to assistance from the nursing staff in the prep area if you become hypo/hyperglycemic

## Appendix G: Pacemaker/AICD Implantable Stimulators

### Cardiac Pacemakers/AICD

- All patients with a Cardiac Pacemaker or AICD **must be interrogated at JHH** prior to any surgical or interventional procedure requiring electrocautery. This means that minor procedures (like endoscopy, bronchoscopy, or other minor procedures) that do NOT use bovie are not required to be seen.
- Pacemakers must be interrogated **within 6 months** of the procedure date. AICDs must be interrogated **within 3 months** of the procedure date.
- If the patient comes through the CPO, it is the responsibility of the Surgical MOC or OR Scheduler to arrange the Device Check for the day of the CPO appointment.
- To schedule a device check, please follow these steps
  - Email the Device Clinic at [device-service@jhmi.edu](mailto:device-service@jhmi.edu)
  - Include in the body of the note:
    - Pt name and Hx#
    - DOS/Time/OR Venue
    - Name of manufacturer of device
    - Surgeon's name and contact information – the Device Clinic will get the cautery information from the surgeon's office directly
    - Indication for the device (if you know)
    - Your name and phone # in case they have any questions
- Once you email them, call them directly at 5-1143 to see if and when they may be able to accommodate the patient.
- If the OR date, time or venue changes after the interrogation has been completed, you must notify the Device Clinic (5-1143) of the changes.

### Vagal Nerve Stimulator (VNS) and Deep Brain Stimulators (DBS)

- For patients with a **Vagal Nerve Stimulator (VNS)**—the device needs to be turned off before surgery & then turned back on after (this is usually done on the day of surgery- turned off in pre-op & back on in recovery). This can be arranged by e-mailing Jodi Richardson. If it is an urgent case during normal business hours, please contact Jodi via CORUS (If she doesn't respond, you can contact Noelle Stewart via CORUS). If outside of normal business hours, please contact LivaNova support at [1-866-882-8804](tel:1-866-882-8804) to discuss options. Jodi will need to know the following
  - Pt name and Hx#
  - DOS/Time/OR Venue
  - Please note, we cannot accommodate surgeries done off of the East Baltimore campus.
  - The VNS also needs to be turned off/ on before & after MRI
- For patients with a **Deep Brain Stimulator (DBS)** - contact the vendor reps for the particular device. If unsure who the vendor is but know the manufacturer of the device, reach out to Pam Lowe in Dr. William Anderson's office for rep contact information
- For patients with Gastric Pacemakers -

## Appendix H: Patients with Cardiac Stents

### **The Johns Hopkins Hospital Antiplatelet Bridging for Patients with Cardiac Stents**

Cardiac stent patients on dual antiplatelet therapy (DAP - aspirin & antiplatelet agents) pose a clinical challenge during surgeries or invasive procedures. The risk of uncontrolled bleeding if DAP therapy is continued versus acute stent thrombosis if DAP is discontinued in the perioperative period presents a clinical dilemma. To help guide perioperative DAP therapy and improve clinical outcomes for patients with coronary stents, a JHH multidisciplinary task force has developed the following one-page decision support tool (please see below).

In addition, the CPO has agreed to assist the attending providers with perioperative management of patients on DAP therapy. A mandatory field in ORMIS for documenting whether the patient has a coronary stent will be used to help facilitate the scheduling of pre-operative/pre-procedural CPO appointments for these patients. If the scheduled case will occur within one week of the posting, the CPO clinic coordinator should be called (410-283-3510) to facilitate a stent patient appointment.

### **Antiplatelet Bridging Tool for Patients with Cardiac Stents**

1. Postpone Elective Procedures until minimum duration of dual antiplatelet therapy (DAP) is complete, unless DAP can be continued without interruption throughout the periprocedure period.

Minimum Duration Stent Implantation when implanted for stable CAD	
Bare Metal Stent (BMS)	1 month
Drug Eluting Stent (DES)	6 months

  

Minimum Duration Stent Implantation when implanted for acute coronary syndrome (unstable angina, NSTEMI or STEMI)	
Bare Metal Stent (BMS)	12 months
Drug Eluting Stent (DES)	12 months

2. High Risk Stent Thrombosis: Consult cardiology and refer to the CPO.

Consult Cardiology and Refer to PEC 14 days prior to procedure for antiplatelet management for:
Surgery required prior to minimum DAP
Any episodes of stent thrombosis

3. For urgent surgery or patient deemed high risk of thrombosis, consider intravenous antiplatelet bridge therapy and Cardiology Consult.
4. If minimum antiplatelet duration met and patient does not have high risk factors above, stop antiplatelet according to the table below:

Antiplatelet	Maximum Holding Time
Clopidogrel	5 days
Prasugrel	7 days
Ticagrelor	5 days

5. Continue low-dose aspirin (81 mg) throughout the periprocedure period for all patients, except patients at high risk for bleeding.

High Bleed Risk- Aspirin may be held for maximum of 5 days
Intracranial Procedures
Posterior Chamber of eye
Spinal Canal

6. Post-operative initiation of antiplatelet therapy should begin as soon as adequate hemostasis is achieved. Patients can be restarted on their home dual antiplatelet therapy. A loading dose of their antiplatelet can be considered.
- 7.

## Appendix I: Surgical Blood Order Schedule

<b>Cardiac Surgery</b>	
Case Category	Rec
Heart or lung transplant	T/C 4U
Minimally invasive valve	T/C 4U
Revision sternotomy	T/C 4U
CABG/valve	T/C 4U
Valve	T/C 2U
Assist device	T/C 4U
Cardiac/major vascular	T/C 4U
Open ventricle	T/C 4U
CABG	T/C 2U
Cardiac wound surgery	T/C 2U
Percutaneous cardiac	T/C 2U
Pericardium	T/C 2U
Lead extraction	T/C 4U
AICD/pacemaker placement	T/S

<b>General Surgery</b>	
Case Category	Rec
AP resection	T/C 2U
Intra-abdominal GI	T/C 2U
Whipple or pancreatic	T/C 2U
Liver resection	T/C 2U
Retroperitoneal	T/C 2U
Substernal	T/C 2U
Liver resection minor	T/S
Bone marrow harvest	T/S
Hernia – Ventral/Incisional	T/S
Hernia – Inguinal/Umbilical	No Sample
Appendectomy	No Sample
Abdomen/chest/soft tissue	No Sample
Lap. or open cholecystectomy	No Sample
Thyroid/parathyroid	No Sample
Central venous access	No Sample
Any Breast – except w/flaps	No Sample

<b>Gynecological Surgery</b>	
Case Category	Rec
Uterus open (radical)	T/C 2U
Open pelvic	T/C 2U
Uterus/ovary open	T/S
Total vaginal hysterectomy	T/S
Hysterectomy robot/lap	T/S
Cystectomy robotic assisted	T/S
Cystoscopy	No Sample
External genitalia	No Sample
GYN cervix	No Sample
Hysteroscopy	No Sample
Superficial wound	No Sample

<b>Neurosurgery</b>	
Case Category	Rec
Thoracic/Lumbar/Sacral fusion	T/C 4U
Spine tumor	T/C 2U
Posterior cervical spine fusion	T/C 2U
Spine Incision and Drainage	T/C 2U
Intracranial tumor / aneurysm	T/C 2U
Laminectomy/discectomy	T/S
Spine hardware removal/biopsy	T/S
ACDF	T/S
Extracranial	No Sample
Nerve procedure	No Sample
CSF/shunt procedure	No Sample

<b>Obstetrics</b>	
Case Category	Rec
Complex Cesarean (Accreta, Percreta, Previa, etc.)	T/C 4U
Repeat Cesarean	T/C 2U
Routine Primary Cesarean	T/S
Vaginal Delivery	T/S
D&C/D&E/Genetic Termination	T/S
Tubal Ligation	No Sample
Cerlage	No Sample

<b>Orthopedic Surgery</b>	
Case Category	Rec
Thoracic/Lumbar/Sacral fusion	T/C 4U
Pelvic orthopedic	T/C 4U
Open hip	T/C 2U
Femur open (fracture)	T/C 2U
Above/below knee amputation	T/C 2U
Total hip arthroplasty	T/C 2U
Humerus open	T/S
Fasciotomy	T/S
Shoulder Incision & Drainage	T/S
Tibial/fibular	T/S
Total knee replacement	T/S
Shoulder open	T/S
Knee open	T/S
High soft tissue	No Sample
Ortho external fixation	No Sample
Peripheral nerve/tendon	No Sample
Lower extremity I&D	No Sample
Hand orthopedic	No Sample
Upper extremity arthroscopy	No Sample
Upper extremity open	No Sample
Podiatry/Foot	No Sample
Hip closed/percutaneous	No Sample
Lower extremity arthroscopic	No Sample
Shoulder closed	No Sample
Tibial/fibular closed	No Sample

<b>Otolaryngology Surgery</b>	
Case Category	Rec
Laryngectomy	T/C 2U
Facial reconstruction	T/C 2U
Cranial surgery	T/C 2U
Radical neck dissection	T/S
Carotid body tumor	T/C 2U
Mandibular surgery	T/S
Neck dissection	T/S
Mastoidectomy	No Sample
Parotidectomy	No Sample
Facial plastic	No Sample
Oral surgery	No Sample
Sinus surgery	No Sample
Thyroid/parathyroidectomy	No Sample
Suspension laryngoscopy	No Sample
Bronchoscopy	No Sample
Cochlear implant	No Sample
EGD	No Sample
External ear	No Sample
Inner ear	No Sample
Tonsillectomy/adenoidectomy	No Sample
Tympanomastoid	No Sample

<b>Thoracic Surgery</b>	
Case Category	Rec
Esophageal open	T/C 2U
Sternal procedure	T/C 2U
Chest wall	T/C 2U
Thoracotomy	T/C 2U
Pectus repair	T/C 2U
VATS	T/S
Mediastinoscopy	T/S
EGD/FOB	No Sample
Central venous access	No Sample

<b>Urology</b>	
Case Category	Rec
Cystoprostatectomy	T/C 2U
Urology open	T/C 2U
Nephrectomy open	T/C 2U
Lap/Robotic kidney/adrenal	T/S
RRP (open)	T/S
Percutaneous nephrolithotomy	T/S
Robotic RRP	No Sample
External genitalia/Penile	No Sample
TURP	No Sample
Cysto/ureter/urethra	No Sample
TURBT	No Sample

<b>Vascular/Transplant Surgery</b>	
Case Category	Rec
Liver transplant	T/C 6U
Thoracoabdominal aortic	T/C 12U
Major liver resection	T/C 4U
Major vascular	T/C 4U
Exploratory lap. vascular	T/C 4U
Kidney pancreas transplant	T/C 2U
Major endovascular	T/C 2U
Above/below knee amputation	T/S
Nephrectomy/kidney transplant	T/C 2U
Organ procurement	T/C 2U
Peripheral vascular	T/C 2U
Vascular wound I and D	T/C 2U
Carotid vascular	T/S
AV fistula	T/S
Peripheral endovascular	T/S
Angio/Arteriogram	No Sample
Peripheral wound I&D	No Sample
1st rib resection/thoracic outlet	No Sample
Superficial or skin	No Sample
Foot/toe amputation/debride	No Sample
Central venous access	No Sample

**If the procedure you are looking for is not on this list, then choose the procedure that most closely resembles that procedure.**

**\*Emergency Release blood is available for ALL cases and carries a risk of minor transfusion reaction of 1 in 1,000 cases.**

Updated Nov. 2020

## Appendix J: Medication Use Before Surgery

**\*THIS LIST IS NOT ALL INCLUSIVE\*** The decision to proceed with surgery is not always based on if a medication was taken or held on day of surgery. Utilize patient risk and urgency of scheduled surgery in your decision making.

### CARDIOVASCULAR

1. **Beta Blockers (Metoprolol, Atenolol, Carvedilol, Nadolol, Bisoprolol, Sotalol, etc.)**
  - Continue and TAKE morning of surgery
2. **Calcium Channel Blockers (Nifedipine, Diltiazem, Amlodipine, Verapamil, etc)**
  - Continue and TAKE the morning of surgery
3. **ACE Inhibitors (ACEi) and Angiotensin Receptor Blockers (ARB) (Captopril, Lisinopril, Benazepril, Enalapril, Ramipril, Losartan, Valsartan, Irbesartan, Candesartan, etc.)**
  - Continue through evening prior to surgery. HOLD morning of surgery for all patients, however, ask patient to bring the medication in the prescription bottle on morning of surgery.
4. **Diuretics (Hydrochlorothiazide (HCTZ), Furosemide, Chlorthalidone, Amiloride, etc.)**
  - Continue through evening prior to surgery. HOLD morning of surgery.
  - EXCEPTION: If taking for CHF, the patient should TAKE morning of surgery
5. **Nitrates (Imdur, Isosorbide, Nitroglycerin Patch)**
  - Continue and TAKE (or wear patch) morning of surgery
6. **Cardiac Rhythm Medications (Digoxin, Amiodarone, Flecainide, Quinidine)**
  - Continue and TAKE morning of surgery
7. **Other Blood Pressure Medications**
  - **Hydralazine:** Continue and TAKE morning of surgery
  - **Clonidine:** Continue and TAKE morning of surgery
  - **Blood Pressure Combination medications:** If these combinations have an ACEi or ARB as part of the combination, have patient HOLD the morning of surgery and bring with them to the hospital. All others, patients should take morning of surgery
8. **Statins and Cholesterol Medications (Simvastatin, Atorvastatin, Crestor, Lovastatin, Vytorin, Fenofibrate, etc)**
  - Continue and TAKE morning of surgery

## Appendix J: Medication Use Before Surgery (continued)

### BLOOD THINNERS

#### 1. Aspirin

- Patients taking Aspirin because they have a Coronary Stent should remain on Aspirin 81mg during the perioperative period and should TAKE the morning of surgery. The only exceptions are procedures that have a high risk of bleeding: Intracranial procedures; surgeries involving the Spinal Canal and Posterior Chamber of the Eye procedures. If the patient has stopped their aspirin and are not having a surgery in the Exception Category please make sure the surgeon is aware they take Aspirin 81 mg because they have a coronary stent, get their OK to restart the Aspirin and communicate that to the patient. If the patient was taking 325 mg Aspirin and stopped, have them restart at 81mg. **(SEE Appendix G)**
- Patients taking Aspirin only for prophylaxis or pain, should follow instructions regarding Aspirin that they were given by their surgeon and if any questions direct them to the surgeon's office.

#### 2. Prescription Antiplatelet Medications (Plavix (Clopidogrel), Prasugrel, Ticagrelor). SEE Appendix G in the Preoperative Roadmap

- Patients should have received instructions from their surgeon and/or Cardiologist regarding when to stop preoperatively. NONE of these medications should be taken the morning of surgery unless the surgeon has specifically instructed the patient to remain on such medications (i.e. Vascular surgical procedures).

#### 3. Oral Anticoagulants (Warfarin/Coumadin, Pradaxa, Xarelto, Eliquis, etc)

- Patients should have received instructions from their surgeon and/or PCP or Cardiologist regarding when to stop preoperatively. NONE of these medications should be taken the morning of surgery.

#### 4. Low Molecular Weight Heparin (Lovenox)

- Stop per surgeon's instructions. HOLD morning of surgery

### PULMONARY

#### 1. Asthma and COPD Medication (Singulair, and ALL inhalers)

- Continue and TAKE the morning of surgery and bring any inhalers on day of surgery

#### 2. Pulmonary Hypertension Medications (Sildenafil, Tadalafil, Vardenafil, Flolan, etc)

- Continue and TAKE the morning of surgery

### ENDOCRINE/METABOLIC

#### 1. Insulin (See Table in APPENDIX D: Diabetic Management for specific instructions)

#### 2. Oral Diabetic Agents (See Table in APPENDIX D: Diabetic Management for specific instructions)

#### 3. Thyroid Medications (Synthroid (Levothyroxine), Armour Thyroid, Tapazol)

## Appendix J: Medication Use Before Surgery (continued)

4. Insulin (See Table in APPENDIX E: Diabetic Management for specific instructions)
5. Oral Diabetic Agents (See Table in APPENDIX D: Diabetic Management for specific instructions)
6. Thyroid Medications (Synthroid (Levothyroxine), Armour Thyroid, Tapazol)
  - Continue and TAKE morning of surgery
7. Steroids (Prednisone, Cortef, etc.)
  - Continue and TAKE morning of surgery
8. Gout Medications (Allopurinol only)
  - Continue and TAKE morning of surgery
9. Osteoporosis Medications
  - Hold on morning of surgery

### CENTRAL NERVOUS SYSTEM

1. Anticonvulsants (Dilantin, Tegretol, Keppra, Lamictal, Trileptal, Depakote, etc.)
  - Continue and TAKE morning of surgery
2. Antidepressants (Prozac, Paxil, Zoloft, Celexa, Lexapro, Pristiq, Cymbalta, Effexor, Wellbutrin etc.)
  - Continue and TAKE morning of surgery
3. Antianxiety Medication (Lorazepam, Diazepam, Alprazolam, Clonazepam)
  - Continue and TAKE morning of surgery
4. Antipsychotics (Risperidal, Haldol, Geodon, Serequel, Abilify, etc)
  - Continue and TAKE morning of surgery
5. Lithium
  - Continue and TAKE morning of surgery
6. Parkinson's Medications (Sinemet (Carbadopa/Levodopa)
  - Continue and TAKE morning of surgery
7. Sleeping Medications
  - May be taken evening before surgery if needed
8. ADD/ADHD Medications
  - HOLD morning of surgery

## Appendix J: Medication Use Before Surgery (continued)

### GASTROINTESTINAL

1. Gastroesophageal Reflux (GERD) Medications (Ranitidine, Prilosec, Nexium, Prevacid, etc.)
  - Continue and Take morning of surgery
2. Antinausea Medications (Ondansetron, Metoclopramide, Phenergan, etc.)
  - Continue and TAKE morning of surgery

### RENAL

1. Renal vitamins, Phosphate binders, iron, erythropoietin, etc.
  - Continue up through the day before surgery then HOLD the morning of surgery

### UROLOGY/ GYNECOLOGY

1. Prostate Medications (Flomax, Proscar)
  - Continue and TAKE morning of surgery
2. Overactive Bladder Medications (Ditropan/Oxybutynin, Detrol, etc.)
  - Continue and TAKE the morning of surgery
3. Hormonal Medications (Estrogen, Progesterone, Testosterone)
  - Continue and TAKE morning of surgery unless otherwise directed to stop at a specific time prior to surgery by your surgeon
4. Oral Contraceptives/Birth Control Pill
  - Continue and TAKE morning of surgery

### ANALGESICS AND PAIN MEDICATIONS

1. Narcotics/Opioids (Codeine, Hydrocodone, Oxycodone, Vicodin, Percocet, Methadone, etc.)
  - Continue and TAKE morning of surgery
2. Neuropathic Pain Medications (Gabapentin, Lyrica)
  - Continue and TAKE morning of surgery
3. NSAIDs (Ibuprofen, Advil, Motrin, Aleve, Naprosyn, Diclofenac, Meloxicam)
  - Should be discontinued at least five days prior to planned surgery or per surgeon's direction

## Appendix J: Medication Use Before Surgery (continued)

4. **Muscle Relaxants (Baclofen, Cyclobenzaprine/Flexeril, Tizanidine/Zanaflex, etc.)**
  - Continue and TAKE as needed only on morning of surgery
5. **Antirheumatic Medications (Azathioprine/Imuran, Hydroxychloroquine/Plaquenil)**
  - Continue and TAKE morning of surgery

### IMMUNOSUPPRESSANTS/ANTI-REJECTION MEDICATIONS

1. **Prednisone, Medrol, Tacrolimus, Cellcept, Sirolimus, etc.**
  - Continue and TAKE morning of surgery
  -

### VITAMINS/SUPPLEMENTS

1. **Multivitamins Containing Vitamin E and Dedicated Vitamin E**
  - Stop one week prior to surgery
2. **Dietary Supplements (Fish Oil, COQ10, Garlic, Gingko, Ginseng, etc.)**
  - Stop one week prior to surgery
3. **Weight Loss Medications (OTC or Prescribed)**
  - If possible, would prefer stopped one week prior to surgery

### MISCELLANEOUS MEDICATIONS

1. **Allergy Medications (Allegra, Claritin, Zyrtec, Sudafed)**
  - TAKE if needed the morning of surgery
2. **Nasal Sprays (Nasacort, Flonase) and Eye Drops**
  - Continue and TAKE morning of surgery
3. **Topical Medications**
  - Continue and use morning of surgery unless it is a topical NSAID (i.e. Voltaren gel)
4. **Migraine Medications**
  - Daily Prophylactic Medications (**Topamax, Propranolol**): Continue and use morning of surgery
  - As needed “triptans” (**Sumatriptan, Rizatriptan**): Continue and may use morning of surgery if needed

**Appendix K: Perioperative Pain Clinic**

Johns Hopkins Medicine  
 Department of Anesthesiology  
 and Critical Care Medicine



**Perioperative  
 Pain Clinic**

**NEW SERVICE & APPOINTMENT OFFERINGS**

**Johns Hopkins Hospital**  
 601 N. Caroline Street  
 Neurosurgery Suite, 5<sup>th</sup> Floor  
 Baltimore, MD 21287

**Contact Information**

Grace Attwa  
 410-955-5608  
[gattwa1@jhmi.edu](mailto:gattwa1@jhmi.edu)

**Faculty**

Marie  
 Hanna, MD  
 Ronen Shechter, MD  
 Christopher Wu, MD  
 Traci Speed, MD

The Department of Anesthesiology and Critical Care Medicine is pleased to announce a new service for patients at the Johns Hopkins Hospital beginning June 1, 2017. The Perioperative Pain Clinic will provide consultation service that evaluates and adjusts a patient’s chronic pain management prior to surgery and manages their analgesic regimen post operatively.

We provide world class care by incorporating a multidisciplinary approach to include the **Acute Pain, Psychiatry, and Integrative Medicine** teams. We hope this service is valuable to you and your patients during this important aspect of their perioperative care.

**Operational Details**

**Available Days:** Every Thursday (excluding holidays)

**Hours:** 8:00 AM – 5:00 PM

**Scheduling:** Call Grace Attwa at 410-955-5608.

**Patient Qualifications:**

Patients scheduled for surgical procedures who are:

- ✓ On chronic opioids
- ✓ On partial agonist opioid buprenorphine (including Suboxone)
- ✓ In an addiction maintenance program
- ✓ On multiple illicit substances (i.e. polysubstance abuse)
- ✓ Opioid naïve patients at risk of developing opioid dependence postoperatively

**Appendix L: Center for Perioperative Optimization - Obstetrics**

Johns Hopkins Medicine  
 Department of Anesthesiology  
 and Critical Care Medicine



**Center for  
 Perioperative  
 Optimization –  
 Obstetrics**

**NEW LOCATION & APPOINTMENT OFFERINGS**

**Johns Hopkins Hospital**  
 600 North Wolfe Street  
 Nelson 2, Suite 150  
 Baltimore, MD 21287

**Johns Hopkins Hospital**  
 601 N. Caroline Street  
 The Outpatient Center,  
 6<sup>th</sup> Floor  
 Baltimore, MD 21287

**Contact Information**

Jamie Murphy, MD  
[jmurphy@jhmi.edu](mailto:jmurphy@jhmi.edu)

Rhonda Thomas  
[rthomas6@jhmi.edu](mailto:rthomas6@jhmi.edu)

The Department of Anesthesiology and Critical Care Medicine is pleased to offer preoperative evaluation appointments for OB patients at the Johns Hopkins Hospital. We hope this service is valuable to you and your patients during this important aspect of their perioperative care.

**Operational Details**

**Available Days:** Mondays and Thursdays (excluding holidays)

**Hours:** 8:00 AM – 5:00 PM

**Scheduling:** Call 410-502-3200.

**Patient Qualifications:**

- Pregnant and scheduled for surgery
- Complex pathologies of the spine (scoliosis, vertebral fusion, disc disease, spinal canal defects, neuropathies, and nerve disease, etc)
- Neurologic pathology (cerebral ischemia, tumor, increased intracranial pressure, cerebral vascular disease, etc)
- Cardiac disease (congenital, valvular, PHTN, cardiomyopathy, ischemic disease, arrhythmia, etc)
- Pulmonary disease (H/O PE, interstitial lung disease, severe asthma, cancer, etc)
- Morbid Obesity (OSA, equipment considerations)
- Hematologic Disorders (thrombophilia, coagulopathies, patients on anticoagulation)
- Cancer
- Abnormal placental presentations (accreta/increta/percreta)
- Airway concerns
- Fetal Therapy patients requiring specialized management (EXIT procedures)
- H/O adverse anesthetic reactions or experiences

**Appendix M: Center for Perioperative Optimization - Children’s Center**

Johns Hopkins Medicine  
 Department of Anesthesiology  
 and Critical Care Medicine



# Children’s Center for Perioperative Optimization

## LOCATION & APPOINTMENT OFFERINGS

**Contact Information**

Dr. Sally Bitzer  
[sbitzer1@jhmi.edu](mailto:sbitzer1@jhmi.edu)

Dr. Joann Hunsberger  
[jhunsbe1@jhmi.edu](mailto:jhunsbe1@jhmi.edu)

**Providers**

Ivor Berkowitz, MD MBA

Sally Bitzer, MD

Joann Hunsberger, MS MD

Rahul Koka, MD MPH

Joanne Shay, MD MBA

Barbara Vickers, MD MPH

Monica Williams, MD

**Pediatric Anesthesia Consultation Services Details**

**Location:**

David M. Rubenstein Building, Lower Level Specialty Clinic,  
 200 N. Wolfe St, Baltimore MD 21287

**Patient Qualifications:**

- Consider consult for pediatric patients with possible anesthesia management concerns
- See supplemental material for specialty-specific guidelines, “Indications for Children’s Center Perioperative Optimization Consult”

**Available Days and Hours:**

- Mondays, 8:00 AM-5:00 PM
- Wednesdays, 8:00 AM-5:00 PM
- Thursdays, 9:00 AM-5:00 PM
- Friday afternoons, 1:00 PM-5:00 PM

**Scheduling:**

- Medical Office Coordinators schedule CCPO consult at time of procedural posting in EPIC using “JHD MR Peds Preop Eval”
- For questions regarding scheduling, call Shantina Harris at 410.955.1499  
 For same day appointments, page 3-3510

**Indications for Children’s Center Consult**

**Any Patient with anesthesia management concerns**

**Anesthesia-Related Concerns**

- History of difficulty with anesthesia
- Family member with malignant hyperthermia or other significant difficulty with anesthesia

**Abnormal Airway Concerns:**

- Known difficult airways
- Abnormal airway anatomy or syndrome (e.g. Treacher-Collins, Goldenhar, Pierre-Robin, Cornelia de Lange, Hurler’s, Hunter’s)
- Obstructive sleep apnea OSA or central apnea for procedure other than tonsillectomy

**Respiratory Disease**

- Cystic fibrosis
- Oxygen dependent/ home CPAP/ventilator dependent
- Pulmonary hypertension
- Poorly-controlled or steroid dependent asthma
- Former premature infant with ongoing oxygen requirement or severe chronic lung disease

**Neuromuscular / Orthopedic Disease**

- Muscular dystrophies
- Skeletal dysplasia
- Progressive severe weakness
- Cervical spine instability/prior neck surgery/in neck brace
- Scoliosis: neuromuscular or curve >60 degrees
- Wheelchair-bound
- Significant limitation in physical activity/exercise tolerance

**Neurologic Disorders**

- Seizures: frequent or poorly controlled

**Metabolic / Gastrointestinal Disorders**

- Metabolic disorders / storage disorders (e.g. Hunter’s, Hurler’s, mitochondrial disorder)

- Diabetes- insulin therapy
- Morbid obesity
- Renal or Hepatic failure

**Transplant-Related Concerns**

- Have had or will have organ transplant

**Hematologic Disease**

- Hemoglobinopathy
- Sickle cell disease
- Coagulopathy

**General / Other Concerns**

- DSS custody/foster care
- Ethical concerns: Do-Not-Resuscitate, Jehovah’s Witness for major surgery

**Cardiology:**

CCPO Consult:

- Consider for all patients with symptomatic or complex congenital heart disease
- Cardiology consult also requested for:
- Patients with **unevaluated or new** heart murmur
  - If patient has known congenital heart disease:
    - a. With **asymptomatic ASD or VSD**, Cardiology evaluation should be within one year of procedure date
    - b. Complex congenital heart disease s/p cardiac surgery totally **asymptomatic**, routine scheduled follow-up should occur prior to procedure date
  - If patient has **symptomatic or complex congenital heart disease**
    - a. Patients should be seen by cardiology *within 30 days* of procedure
    - b. Additionally, inform cardiologist of patient’s procedure date and if patient is admitted, inform cardiology service about any child with symptomatic or complex congenital heart disease.

Please ensure cardiac consult and related tests are available in EPIC

