

General Pre-Op

- communicate medical problems to surgeon and anesthesiologist
- see if surgeon has any specific requests
- assess prior surgeries and complications if any
- NEVER write "cleared for surgery" rather write "low, medium, or high risk for problem X, Y, Z)
- if you did a test in the past 4mo then no need to repeat pre-op
- evidence based medicine now shows that routine tests are not recommended, the fewer the better, order based on PMHx, meds, PEx
- adjust, add, stop meds
- in general continue all meds esp CV meds till morning of surgery
- if med has long half life you can dont have to take on day of surgery and just restart when you can tolerate po
- stop NSAIDs 3d prior b/c associated w/ renal dysfxn
- stop SSRIs 2d prior b/c associated w/ plt dysfxn
- stop all herbals and supplements 7d prior
- refer to specific sections for specific meds
- if a pt is chronically on steroids

CV

- Cath: "consent for cath \pm PCI and anesthesia, NPO x meds after MN, NS at 150cc/hr"
- Why Important? MI after surgery accounts for 20% of in-pt mortality and if non fatal then it is an independent RF for future events
- If High RFs (**UA, decompensated CHF, severe valve dz, recent MI, major arrhythmias**) or Major Surgery (**major vascular surgeries not e.g. appys, hip replacement, etc**) then work-up (**thallium stress test**) and consider med changes (below)
- Pre-op revascularization w/o other reasons does not reduce peri-operative risk
- Continue all meds except ACE-I/ARB (b/c shown to cause intra-operative hypotension esp if pt has CKD) up to morning of operation and then resume after operation when pt can tolerate po diet
- Evidence that all pre-op pts w/ RFs or CAD be on a BB specifically atenolol 25-100mg PO Qd x1wk titrating to HR 55 before surgery and 25-100mg PO Qd x30d titrating to HR 70 (NB there is some evidence that the use of BB increases r/o CVA)
- If high risk place pt on tele x5d b/c MIs occur typically w/in 4d and follow cardiac biomarkers after surgery
- If you can, delay elective surgery >6wks from PCI
- in general rule out AS, bad CHF, and coronary dz

Pulm

- RFs for post-op pulm complications: age, COPD, CHF, emergency surgery, long surgery vascular surgery, ab surgery, head & neck surgery, albumin <3.5g/dL, functional status, more intense anesthesia (NOT controlled asthma, obesity, DM)
- do spirometry if you think obstructive lung dz is not maximally reduced
- cont meds to morning of surgery and immediately begin after
- stop smoking for >2mo
- After Surgery
 - **Lung Recruitment:** IPPB Q4hrs, IS Q1hr
 - **Pulmonary Toilet:** Hypertonic Saline Q8hrs, MedNebs Q6hrs
 - **Gastric Decompression:** NGT (esp if ab surgery and pt has N/V)
 - **DVT Prophylaxis**
- **Post-Op Pulmonary Complications:** atelectasis, PNA, resp failure, bronchospasm, exacerbation of underlying chronic lung dz

Renal

- Renal Insufficiency (Cr > 2.0 and BUN >22) is an independent RF for post-op cardiac/pulmonary complications not only post-op renal complications
- make sure fluid/electrolyte balanced
- use anesthetics that are liver metabolized or renal dose meds

GI

- Any Type of Liver Problem (hepatitis/cirrhosis except NASH) has increased anesthetic and surgical risk b/c of impaired hepatic blood flow, malnutrition, hypoalbuminemia, coagulopathy, underlying encephalopathy resulting in anesthetic control, poor wound healing, infection, etc

Endo

- DM
 - schedule procedure in early morning and check CBG Q1-2hrs before/during/after procedure
 - Problems
 - Micro/Macrovascular Dz = perioperative CV complications
 - Autonomic Neuropathy = urinary retention, delayed oral intake, aspiration, etc

- Peri-Op Stress-Related Hyperglycemia/Ketoacidosis = poor wound healing, post-op infection, etc
 - Glucose Control: a study showed that tighter control (CBG: 80-110) has less M&M than conventional control (CBG: 180-200)
 - T1: regular insulin gtt w/ maintenance of 1-2U/hr along w/ D5W gtt at 75-100cc/hr, goal CBG 140-180
 - T2: hold oral agents but esp insulin secretagogues/Metformin on morning of and resume when eating full diet/48hrs post op when normal renal fxn, if on insulin then do same as T1
 - ?If minor surgery then take 1/3-1/2 dose of usual SC long-acting insulin on the morning of surgery and monitor CBG Q2hrs and use Q4-6hr short acting insulin and 1/2NS w/ 5% dextrose and 20mEqL KCl to maintain tight sugar control
 - ?If major surgery then do NOT take usual SC long-acting insulin on the morning of surgery rather start an insulin infusion 2-3hrs before surgery w/ 25U regular insulin in 250mL NS at 1-3U/hr and monitor CBG Q1hrs to maintain tight sugar control, these pts should also receive 1/2NS w/ 5% dextrose and 20mEqL KCl
 - ?If on orals then hold short-acting drugs on the morning of surgery and while receiving nothing by mouth, Metformin 2d before surgery, and long-acting drugs 3d before surgery.
 - ?Continue above until pt begins eating then restart pts normal home regimen
- Stress Dose Steroids (below)
 - Stress Not Needed: <5mg/d (prednisone or equivalent) and <3wks
 - Stress Dose Needed: >20mg/d (prednisone or equivalent) or >3wks

Current Steroid Use	Surgery	Pre	Peri	Post
<5mg Qd regardless of duration <3wks regardless of dose	NA	Normal Dose	Nothing	Restart Normal Dose w/ IV or PO depending on when pt is tolerating orals
5-20mg Qd AND >3wks	Minor Risk	Normal Dose	Nothing	Restart Normal Dose w/ IV or PO depending on when pt is tolerating orals
	High Risk	Normal Dose + 25mg IV Hydrocortisone	Nothing	15mg IV Hydrocortisone Q8hrs 1d post-op then Restart Normal Dose w/ IV or PO depending on when pt is tolerating orals
	High Risk	Normal Dose + 50mg IV Hydrocortisone		25mg IV Hydrocortisone Q8hrs 2d post-op then Restart Normal Dose w/ IV or PO depending on when pt is tolerating orals
>20mg Qd AND >3wks	Minor Risk	Normal Dose	Nothing	Restart Normal Dose w/ IV or PO depending on when pt is tolerating orals
	Mod Risk	Normal Dose + 50mg IV Hydrocortisone	Nothing	25mg IV Hydrocortisone Q8hrs 2d post-op then Restart Normal Dose w/ IV or PO depending on when pt is tolerating orals
	High Risk	Normal Dose + 100mg IV Hydrocortisone	Nothing	25mg IV Hydrocortisone Q8hrs 3d post-op then Restart Normal Dose w/ IV or PO depending on when pt is tolerating orals

Heme

- 0.4-20% (low-high risk surgery) for DVT and 0.2-7.5% (low-high risk surgery) for PE w/o prophylaxis
- Pre-op prophylaxis is actually more important than post-op prophylaxis!!!
- Extend prophylaxis for up to 1mo after the more invasive the orthopedic surgery
- DVT prophylaxis prevents 65% of post-op DVTE
- SCDs (poor compliance, unclear if length aka to calf or knee is important, use if pt has bleeding problem or in conjunction w/ AC in pts w/ high r/o DVTE)
- Compression Hoses (if too loose then not effective vs if too tight then actually increase r/o DVTE)
- AC (LMWH \$ vs less r/o HIT, less r/o bleeding, more effective and at BUMC it is cheap b/c on formulary) NB also Coumadin, DTI, Factor 5 inhibitors can be used but there are fewer studies)
- Ambulation is very important even if use the above
- Check CBC and transfuse to Hct >30 and Plt >100k and check coags if +RFs
- Anemia: autologous donation, pre-op erythropoietin, intra-operative blood salvage