Medical Optimization of Surgical Patients

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Objectives

- Common conditions to look for when optimizing surgical patients pre-operatively
- Indications for medicine referral for optimization
- How to refer for outpatient evaluation
- High risk patients and collaboration

Basic approach

- Getting a thorough history and physical is key
- Understanding Surgical risk and patient specific risk to estimate a combined risk
- Type of anesthesia planning, if available
- Goal is to not “clear” the patient but to get them at their optimum best to tolerate the surgery
- Frequently, the focus is only on cardiac risk but pulmonary complications have been shown to be associated with higher length of stay and cost of hospitalization.
- In pre-op clinic, we do a comprehensive assessment of all medical conditions
- Slightly different approach to low-risk surgery vs elevated risk surgery

Low risk surgery

- Estimated risk of mortality <1%
- Often done under MAC, but not always
- Most ophthal and dental surgeries are low risk
- Other examples- Endoscopic surgeries (EGD, colonoscopy, cystoscopy, bronchoscopy) sinus surgery, pacemaker/ICDs, angiographies, hand and foot surgeries, skin biopsy, breast biopsy and lumpectomy, AV fistula creation etc
- Unless they have active conditions, they often don’t require cardiac testing

Elevated risk surgery (intermediate+high risk)

- Mortality risk >1%
- Intermediate risk (1-5% mortality risk): Major orthopedic surgeries, hysterectomy, laminectomy, spinal fusion, infra-inguinal vascular surgeries
- High risk (>5% mortality risk): Craniotomy, major head and neck surgeries, intra thoracic surgeries, intra-abdominal surgeries, supra-inguinal vascular surgeries

Specific data for Cardiac evaluation

- Prior stents/heart surgery
- Prior cardiac testing- EKG, stress test, Echo, cath
- Devices-indication and when last interrogated
- Specific medication considerations for DAPT (dual antiplatelet therapy)
- If h/o arrhythmia, then obtain details of therapy
- Any concerning murmurs on exam
- Evaluate for any active conditions- heart failure, uncontrolled A fib, recent MI, severe valvular disease
- Functional status- very important!

Timing of Elective Noncardiac Surgery in Pts With Previous PCI

(Levine et al, Circulation 2016;134:e123-55)

COR	LOE	Recommendations
I	B-NR	Elective noncardiac surgery should be delayed 30 days after BMS implantation and optimally 6 months after DES implantation (101-103,143-146).
I	C-EO	In patients treated with DAPT after coronary stent implantation who must undergo surgical procedures that mandate the discontinuation of $P2Y_{12}$ inhibitor therapy, it is recommended that aspirin be continued if possible and the $P2Y_{12}$ platelet receptor inhibitor be restarted as soon as possible after surgery.
IIa	C-EO	When noncardiac surgery is required in patients currently taking a $P2Y_{12}$ inhibitor, a consensus decision among treating clinicians as to the relative risks of surgery and discontinuation or continuation of antiplatelet therapy can be useful.
IIb	C-EO	Elective noncardiac surgery after DES implantation in patients for whom $P2Y_{12}$ inhibitor therapy will need to be discontinued may be considered after 3 months if the risk of further delay of surgery is greater than the expected risks of stent thrombosis.
III: Harm	B-NR	Elective noncardiac surgery should not be performed within 30 days after BMS implantation or within 3 months after DES implantation in patients in whom DAPT will need to be discontinued perioperatively (101-103,143-146).

Pulmonary evaluation

- Obtain pmh of COPD, asthma, h/o intubation, tracheostomy, O2 needs
- Recent pulmonary infection (in general recent pneumonia <4 weeks increases risk for post-op pulm complications and consider delaying surgery to allow full recovery)
- Screen for sleep apnea- STOP BANG score
- If known sleep apnea, then ask about PAP therapy compliance
- If known pulmonary HTN, look for recent Echo/PA pressures.
- Patients with severe pulmonary HTN are very high risk and often times GA may be contraindicated for these patients.
- Patients with RV failure also are at high risk for complications and difficult to resuscitate
- Recent PE (<3 month) is a reason to delay **elective** surgery (time sensitive cancer surgeries-risk vs benefit discussion)
- Patients with severe lung disease should have goals of care discussion in advance of surgery

STOP BANG score

- **S**noring
- **T**iredness/fatigue during daytime
- **O**bserved apnea
- **P**ressure (being treated for high BP)
- **B**MI >35
- **A**ge >50
- **N**eck circumference >40 cm
- **G**ender Male

1 point for each condition.
Score 0-2: Low risk
Score 3-4: Intermediate risk
Score >5: High risk for sleep apnea

Implications:

-High risk for OSA patients have higher incidence of post-op respiratory complications.

-High risk for reintubation after GA

-These patients are also at high risk for resp suppression from opioids and sedatives

Management of antiplatelets and anticoagulants

- This would be one of the indications to refer to our pre-op clinic
- Patients on DAPT or anticoagulants need specific instructions (risk for surgery cancellation)
- We often collaborate with patient's cardiologist if they had recent stents placed and need to hold their Plavix or Brilinta.
- Patients with recent DVT, PE or stroke have high risk and their anticoagulation should not be held unless active bleeding or emergency surgery

Antiplatelets consideration

- Recent stent- do not hold their Plavix or Brilinta without discussing with their cardiologist (elective surgery may need to be delayed)
- Patients with cardiac stents should have their aspirin continued peri-operatively unless it is craniotomy or spine surgery
- Typical hold time:

➢ASA : 5-7 days

➢Plavix: 5 days

➢Brilinta: 5 days

➢Effient: 7-10 days

Anticoagulation considerations

- Fewer people on Warfarin these days
- Very few indications for bridging
- Indication for anticoagulation use and when last dose was
- In pre-operative clinic, we will often tell them when their last dose before surgery should be
- DOACs do not need bridging

Hold times for commonly used anticoagulants

- Warfarin- generally 5 days if in therapeutic range INR
- Apixaban (Eliquis): 1-3 days (low bleeding risk surgery 1 day hold is sufficient based on PAUSE trial)
- Rivoroxaban (Xarelto): 1-3 days (low bleeding risk 1 day sufficient)
- Edoxaban (Savysa): 1-3 days
- Dabigatran (Pradaxa): 3-5 days
- Enoxaparin (Lovenox): 24 hours
- Heparin IV: 4-6 hours

Patients undergoing Neuraxial anesthesia (Spinal, epidural) will need 3 day hold time for DOACs based on ASRA guidelines

Other conditions we worry about

- Chronic steroids use-risk for adrenal suppression
- Uncontrolled DM- associated with increased risk for SSI. Recent A1c is helpful but pre-op and post-op BS control matters more.
- Recent DVT/PE (<3 mo) where anticoagulation should not be interrupted
- Pre-operative Anemia-independently associated with increased risk of transfusions as well as infection, increased morbidity and prolonged length of stay
- Bleeding risk based on anticoagulation use or other bleeding disorders
- CKD patients at high risk for post-op AKI (PO-AKI) and needing dialysis post-op
- VTE risk, specially in total joint patients, cancer patients and obese (bariatric surgery) patients

Indications for Referral to Hospitalist Pre-op clinic

- Patients undergoing High risk surgery often have concomitant significant comorbidities that may need optimization
- Any patient with medical issues that need optimization prior to surgery
- New abnormal labs needing further evaluation
- ASA 3 or higher

ASA Classification

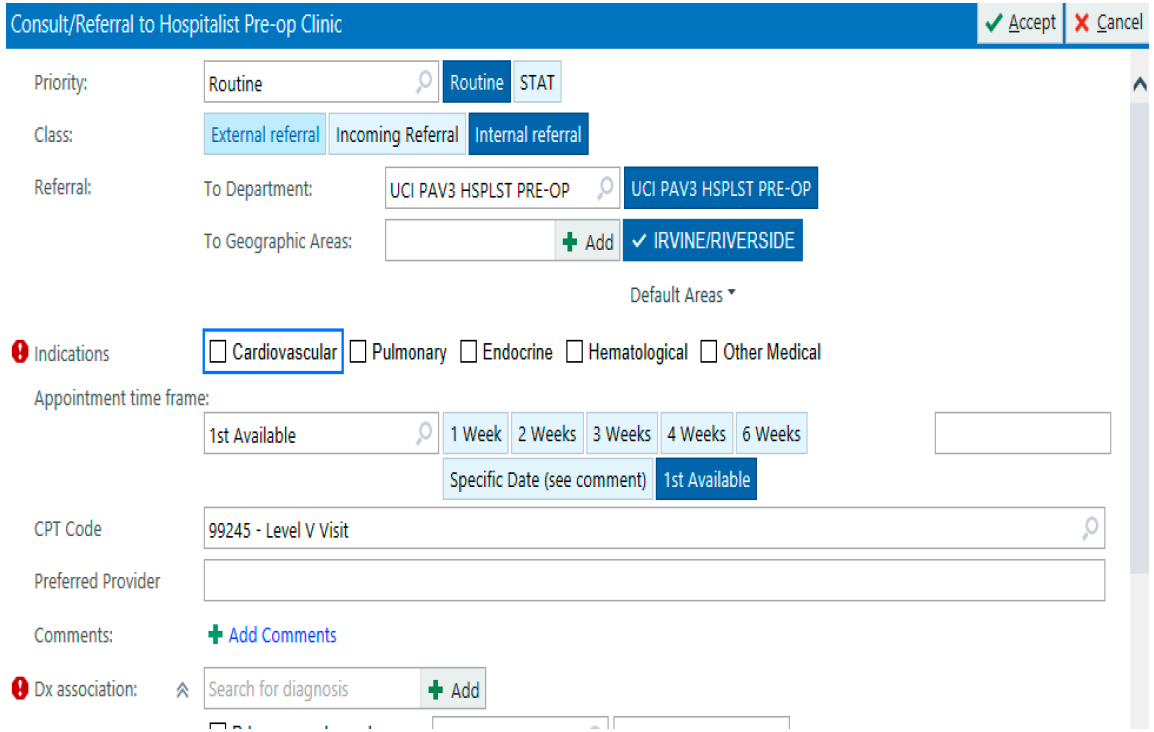
Table 1. ASA Physical Status Classifications and Examples

ASA PS Classification	Definition	Examples
ASA I	A normal healthy patient	Healthy, nonsmoking, no or minimal alcohol use
ASA II	A patient with mild systemic disease	Mild diseases only without substantive functional limitations. Examples include (but not limited to): current smoker, social alcohol drinker, pregnancy, obesity (30 < BMI < 40), well-controlled DM/HTN, mild lung disease
ASA III	A patient with severe systemic disease	Substantive functional limitations; one or more moderate to severe diseases. Examples include (but not limited to): poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, premature infant PCA <60 wk, history (>3 mo) of MI, CVA, TIA or CAD/stents
ASA IV	A patient with severe systemic disease that is a constant threat to life	Examples include (but not limited to): recent (<3 mo) MI, CVA, TIA or CAD/stents; ongoing cardiac ischemia or severe valve dysfunction; severe reduction of ejection fraction; sepsis; DIC; ARD; or ESRD not undergoing regularly scheduled dialysis
ASA V	A moribund patient who is not expected to survive without the operation	Examples include (but not limited to): ruptured abdominal/thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction
ASA VI	A declared brain-dead patient whose organs are being removed for donor purposes	

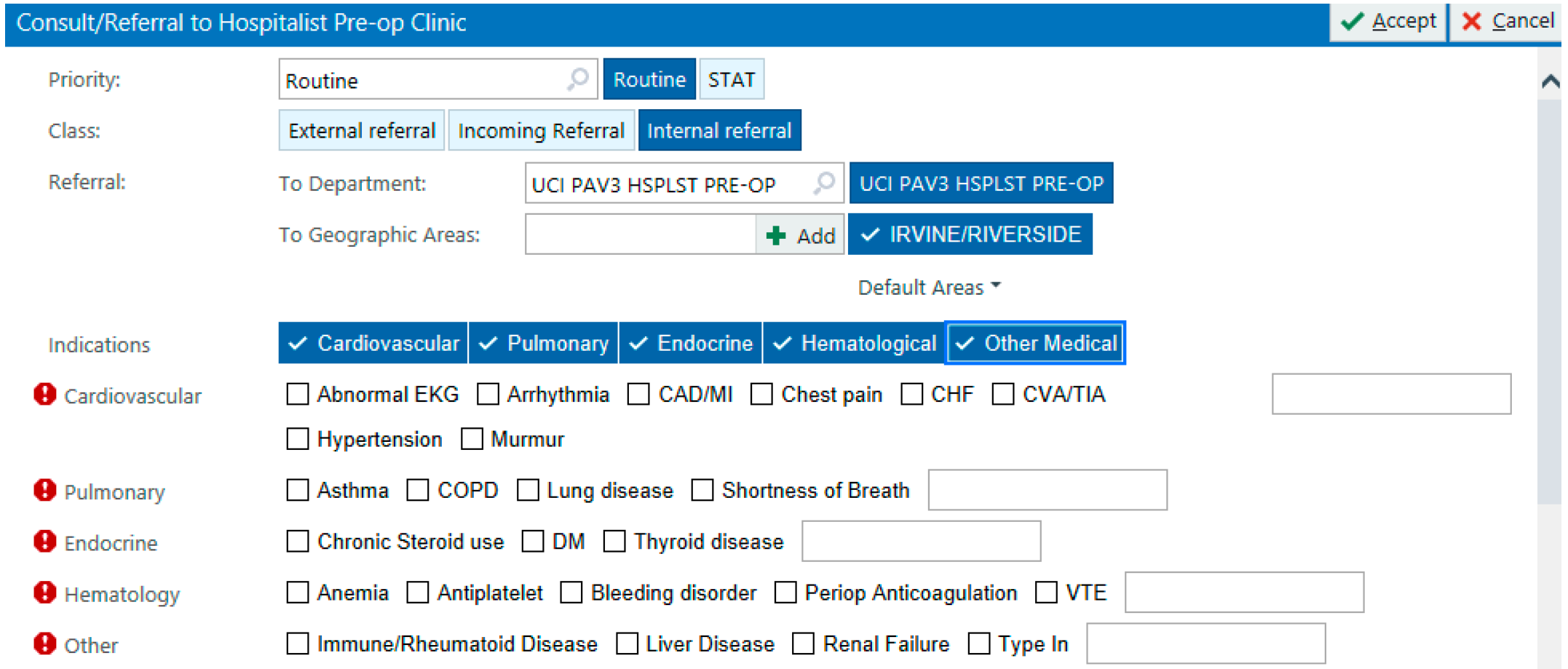
ARD, acid reflux disease; **ASA,** American Society of Anesthesiologists; **BMI,** body mass index; **CAD,** coronary artery disease; **COPD,** chronic obstructive pulmonary disease; **CVA,** cerebral vascular accident; **DIC,** disseminated intravascular coagulation; **DM,** diabetes mellitus, **ESRD,** end-stage renal disease; **HTN,** hypertension; **MI,** myocardial infarction; **PCA,** postconceptual age; **PS,** physical status; **TIA,** transient ischemic attack

How to Refer

- Search for CON9820 or just referral to hospitalist Pre-op Clinic
- Clinic is located in PAV3 in Orange campus.



How to Refer


Consult/Referral to Hospitalist Pre-op Clinic
Accept
Cancel
Priority:
Routine
Routine
STAT
Class:
External referral
Incoming Referral
Internal referral
Referral:
To Department:
UCI PAV3 HSPLST PRE-OP
UCI PAV3 HSPLST PRE-OP
To Geographic Areas:
Add
IRVINE/RIVERSIDE
Default Areas
Indications
Cardiovascular
Pulmonary
Endocrine
Hematological
Other Medical
Cardiovascular
Abnormal EKG
Arrhythmia
CAD/MI
Chest pain
CHF
CVA/TIA
Hypertension
Murmur
Pulmonary
Asthma
COPD
Lung disease
Shortness of Breath
Endocrine
Chronic Steroid use
DM
Thyroid disease
Hematology
Anemia
Antiplatelet
Bleeding disorder
Periop Anticoagulation
VTE
Other
Immune/Rheumatoid Disease
Liver Disease
Renal Failure
Type In

High risk patients-examples

- Severe Pulmonary HTN specially Group 1 on specialty PH meds
- Advanced heart failure with decompensated state
- Decompensated liver cirrhosis
- Recent MI, stroke or VTE (<3 months)
- Severe valvular disease like aortic stenosis
- Multiple uncontrolled medical conditions

Collaborative Practice

Parallel Play:
“ egocentric- play adjacent to each other, but do not try to influence one another's behavior”

Co-operative Play:
“ different complementary roles with a shared purpose”

Collaborative Practice

- Our goal is to convey the complete risk to patient and then allow them to have further discussion with their surgeon to decide on proceeding
- We collaborate with sub-specialists and surgeons as well as anesthesia pre-op clinic (CPC)
- If we are specifically worried about someone's anesthesia risk, we reach out to anesthesia to jointly discuss what approach they would prefer in that situation

Summary

- Medical optimization is a complex process and requires time
- A good detailed history can help elicit patient specific risk
- Collaborate with medicine/cardiology to decide on antiplatelets hold time based on patient and surgery risk
- Consider referral to Hospitalist Pre-op clinic for medical optimization
- Proper communication between all specialties is necessary for best patient outcomes.