Harper Hospital
Detroit Medical Center / Wayne State University

6ICU
Surgical ICU

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Clinical Pearls 6ICU

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Overview of the units

6ICU is a general surgery intensive care unit. The majority of patients typically fall within a handful of surgical services. Three most predominate surgical services are Surgery A, Surgery B (Vascular) and, Surgery C. The unit may also house overfill from other intensive care units in the tower. When overflow occurs, it is best to contact the pharmacist whose typically covers that unit to determine who will follow the patient.

Surgery residents rotate through the various rotations one month in duration. Each service is broken down into Chief resident(s); first assistant; and resident(s). They may or may not have students on their service. Typically, either the first assistant or chief resident will be covering the patients in the intensive care unit. This will depend on the specific service, because Surgery C is divided into "The L&L (Dr. Lucas and Dr. Ledgerwood) Service" and the "Private Service." Regardless it is most effective to contact the chief resident for the service when questioning pharmacotherapy options, because they should know all the patients. A list of all the surgery services will be updated on a monthly basis and additional copies can be found in the 6ICU nurses station.

Anticoagulation Services

Pharmacy is not always consulted for heparin or warfarin dosing. Please contact the primary team to verify whether to have anticoagulation service follow and define goal PTT and INR for each patient.

Vascular Surgery Patients

The vascular surgery patients are often placed on anticoagulation to maintain patency of endovascular grafts. Depending on the severity of the disease and the risk they may target lower aPTT levels. In addition, patients who go to A-gram for catheter directed TPA infusions may also have low dose heparin administered to maintain the sheath (Please see thrombolytic section).

Heparin Dosing

- For patients on intravenous heparin and scheduled surgery, heparin should be discontinued 6 hours prior to surgery.
- Bolus dose of heparin is not recommended in post-operative patients.
- Infusion rate of heparin should be initiated conservatively at 12 units/kg/hr.
- In general, vascular surgery is more conservative than other services with anticoagulation dosing due to the risks of post-op bleeding and hematomas. Goal PTT for majority of the patients is 48-65 sec.

- For patients with post-operative atrial fibrillation or flutter, heparin may be started after 48-72 hours if patients remain in atrial fibrillation/flutter. Again, some patients may be started on subcutaneous heparin only. IV heparin may be initiated when the bleeding risk is considered minimal.

Warfarin Dosing

- Loading dose of warfarin should be avoided in post-op patients. Consider initial dose of 2.5-5 mg only. Please note that many of our patients are either NPO or on tube feedings which provide very little Vitamin K therefore, small doses of warfarin are needed.
- Goal INR and duration of therapy should be discussed with surgery residents. Please refer to DMC Anticoagulation Dosing Guidelines for recommended goal INR for each indication.

Thrombolytic Therapy in Peripheral Artery Occlusion (PAO)

National guidelines were published by an advisory panel organized by the Society of Cardiovascular and Interventional Radiology (SCIVR) in 2000, supporting the use of alteplase for PAO. For peripheral arterial occlusion, the panel recommended using the lowest possible starting dose of 0.25 to 1mg/hr.

The Society of Cardiovascular and International Radiology (SCVIR) advisory panel guidelines for PAO:

- 0.25-2mg/hr (non-weight based); however, the most common dose is 0.5-1mg/hr
- Total cumulative dose ≤40mg; *Only if desired*, a single bolus dose should not exceed 10mg
- Concurrent heparin 2500 unit bolus followed by 500 units/hr. (aPTT 1.25-1.5 times control)

CONTRAINDICATIONS TO THROMBOLYTICS

-Absolute Contraindications

- History of hemorrhagic CVA at any time
- Non-hemorrhagic stroke or other CVA event within past year
- Severe hypertension (SBP > 180 mmHg or DBP > 110 mmHg) at any time during acute presentation
- Active internal bleeding
- Noncompressible external bleeding
- Suspicion of aortic dissection

-Relative Contraindications

- Baseline INR > 2
- A recent (within 2 weeks) invasive or surgical procedure
- Prolonged (>10 min) cardiopulmonary resuscitation
- Known bleeding diatheses
- Pregnancy
- Hemorrhagic ophthalmic condition (i.e. hemorrhagic diabetic retinopathy)
- Active peptic ulcer disease
- History of severe hypertension, currently controlled
- Recent trauma

Recent < 3 days arterial puncture

Pharmacokinetic Services

All patients on vancomycin and aminoglycosides should be automatically consulted in 6ICU.

Surgical Prophylaxis

Antibiotics should be given 30-60 minutes prior to the procedure.

Operation	Likely Pathogen	Recommended Drug
Vascular (prosthetic graft*)	S. aureus, S epidermidis, Enteric Gm Neg Bacilli	Cefazolin or Vancomycin + Gentamicin
Vascular (non-prosthetic)	S. aureus, S. epidermidis, Enteric Gm Neg Bacilli	Cefazolin
Head and Neck	S. aureus, Streptococci, Oral anaerobes	Ampicillin/sulbactam or Clindamycin + Gentamicin
Esophageal, Gastroduodenal	Enteric Gm Neg Bacilli, GPC	Cefazolin or Clindamycin + Gentamicin
Biliary Tract	Enteric Gm Neg Bacilli, Enterococci, clostridia	Cefazolin or Clindamycin + Gentamicin
Colorectal	Enteric Gm Neg Bacilli, Anaerobes, enterococci	Oral: Neomycin + Erythromycin IV: Cefoxitin or, Clindamycin + Gentamicin
Appendectomy	Enteric Gm Neg Bacilli, Anaerobes, enterococci	Cefoxitin or, Clindamycin + Gentamicin
Genitourinary (Prostatic)	Enteric Gm Neg Bacilli, Enterococci	Ciprofloxacin (PO)
Contaminated Surgery Start abx preop and cont. postop	Enteric Gm Neg Bacilli, Anaerobes, enterococci	Cefoxitin ± Gentamicin or Clindamycin + Gentamicin

*The incidence of MRSA infections warrant the use of Vancomycin prophylaxis in prosthetic device insertion

- Cefazolin is the first line agent for most general surgery procedures surgery.
- For patients with penicillin allergy, vancomycin (±gentamicin) may be used. Vancomycin and gentamicin dose should be assessed in all patients for appropriate dosing for renal function.
- Duration of antibiotic should be only 24 hours after surgery.
- If vancomycin or gentamicin is ordered for only few doses, a brief note may be written to indicate appropriate dose for patient's renal function. Dose adjustment may not be necessary if renal function is acceptable and no significant accumulation is expected after 2-3 doses.
- If the antimicrobial order is written and duration is not indicated, the full initial note must be written per DMC Pharmacokinetic Dosing Policy for all vancomycin and aminoglycosides.
- When used for surgical prophylaxis, vancomycin criteria should be entered as "P7" and the duration should not be longer than 48 hours. Once the 48-hour window has passed, the resident and attending need to be contacted for discontinuation or attending override.

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