Rotation Title: Advanced CV Anesthesia

I. Definition: The advanced cardiovascular anesthesiology rotation is for CA-3 residents. One month is required but up to 6 months may be taken as part of the advanced clinical tract year. These rotations focus on all elements of the perioperative care of patients having cardiac surgery, including coronary revascularization, valve replacement, valve repair, arrhythmia surgery, ventricular remodeling and cardiac transplant. It is expected that more advanced residents will participate in more challenging cases including total circulatory arrest and heart transplantation cases.

II. Curriculum: The goal is to continue the broad exposure to all elements of anesthesia for adult cardiac surgery that was begun in the CA-1 and CA-2 years.

III. Performance Assessments:

A. Self Assessment
You (the resident) are to check off each criterion as the material is mastered. Self reflection on your own competencies is critical.

B. Faculty Assessment
Faculty will periodically review your self assessment and discuss their assessments of your competencies. The overall scores on the six competencies will be reported to you at least weekly.

C. Mentor Assessment
Your mentor should meet with you quarterly and review your entire portfolio. The mentor should report areas in which you have deficiencies (for your level of training). This report may be to you and/or to the program director as determined by your mentor.

IV. Competencies Assessed (Performance Criteria):

A. Patient Care: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Discussions of cardiac anesthetic with the patient and family members, including alternatives, risks and benefits of the procedure
2. Insertion, management, and interpretation of the results of arterial catheterization, central venous catheterization, and pulmonary artery catheterization with minimal staff assistance
3. Performance of fiberoptic bronchoscopy with minimal staff assistance
4. Insertion and management of double lumen endotracheal tubes with minimal staff assistance
5. Placement and management of epidural catheters for patients having cardiothoracic surgery
6. Interpretation of echocardiographic and cardiac catheterization studies

B. Medical Knowledge: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Describe the normal and pathologic anatomy and physiology of the heart.
2. Discuss pharmacology pertinent to the cardiovascular system including arrhythmia therapy, vasodilators, inotropes and modifiers of hemostasis, In particular discuss multidrug therapies and how best to optimize drug therapy in the cardiac patient
3. Describe coronary artery and valvular heart disease in detail.
4. Explain the anesthetic implications of severe cardiac diseases.
5. Discuss and explain the rationale of induction and maintenance of anesthesia techniques for cardiothoracic surgery.
6. Discuss the mechanism and anesthesia implications of cardiopulmonary bypass.
7. Describe the pathophysiology and the anesthesia implications of anesthesia for aortic surgery.
8. Explain the techniques, advantages and disadvantages of off-pump bypass surgery
9. Discuss the use of ECMO
10. Understanding of co-morbid conditions found in patients with cardiac disease

The CA-3 resident on their advanced CV rotation shall be responsible for mastering all material listed in Appendix A. These will be assessed by written and oral examinations.

C. Practice Based Learning and Improvement: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Determine the status and outcome of patients anesthetized by the resident.
2. Review the surgical procedure and anesthetic of completed cases and compare with the anesthetic plan to determine whether the best plan had been formulated
3. Track case counts showing involvement in variety of cases so that comfort level extends to both revascularization and valvular surgeries
4. Attend and/or present at M&M conference, journal clubs, and regional or national meetings
5. Follow CV literature for new drugs and techniques
6. Look up and report to attending physicians the scientific evidence for the appropriate surgical care and anesthetic care of both usual and unusual cases. This should be done at least weekly. A copy of these reports may be placed in your portfolio if so desired.

D. Interpersonal and Communication Skills: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Be able to identify the relevant preoperative information needed to plan anesthesia for difficult cardiac surgeries
2. Interact smoothly with the surgical team as evidenced by
   a. No delays in surgical start time
   b. Recognition of timing of initiation of anticoagulation and cardiopulmonary bypass
   c. Recognition of cardiac status during weaning from bypass

E. Professionalism: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Safely prepare the patient for invasive monitoring
2. Interact with the members of the cardiac team in a professional manner to foster good patient care
3. Acceptance of responsibility for effects of anesthetic on the patient

F. Systems-Based Practice: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Understanding of the role of cardiac catheterization, interventional cardiology and cardiac surgery in the health maintenance of the elderly
2. Cost-benefit ratios for various procedures according to their disease processes
3. Use of hospital protocols in the management of cardiac surgery patients, including preprinted orders, drug protocols, ICU protocols, etc.
4. Knowledge of the workings of hospital committees involving CV surgeons and anesthesiologists

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Appendix A: Medical Knowledge expected to be mastered during CA-2 Neuroanesthesia Rotation

Lecture 49

Controlled Hypothermia

1) Techniques
2) Systemic Effects
3) Shivering
4) Rewarming
5) Complications

Lecture 124

Pharmacology of Anticoagulants, Antithrombotics and Anti-platelet Drugs

1) mechanism of action
2) comparison of drugs
3) drug interactions
4) monitoring of effects
5) side effects and toxicity

Lecture 125

Immunosuppressive and Anti-Rejection Drugs

1) Immunosuppressants
2) immunosuppression related to blood transfusion

Lecture 138

Congenital Heart Disease

1) Cyanotic Defects
2) Acyanotic Defects
3) Primary Pulmonary Hypertension
4) Altered Uptake/Distribution of IV and Inhalation Anesthetics
5) Anesthetic Considerations
    a) cardiac surgery, corrective and palliative
    b) noncardiac surgery