

Beth Israel Deaconess Medical Center
Department of Anesthesia, Critical Care, and Pain Medicine
Rotation: Cardiac Anesthesia (CA-1)

GOALS AND OBJECTIVES

Goals

- Become familiar with preparing for cardiac cases
- Gain basic experience in perioperative cardiac patient care

Objectives by Core Competency

Patient Care

A. Preoperative Assessment

- Learn how to perform a “cardiac directed” preoperative evaluation
 - Interpretation of relevant symptoms and signs of cardiovascular disease
 - Focused and complete physical exam
 - Ruling out potential issues for TEE placement
 - Ruling out blood pressure differences in the upper extremities
 - Basic interpretation of cardiac testing
 - Cardiac cath results and interpretation
 - Coronary anatomy and significance
 - Echocardiographic findings
 - Tests of myocardial ischemia and viability
 - Review of all laboratory data
- Learn how to manage preoperative medications

B. Case Preparation

- Master the routine setup for cardiac cases
 - Outlined in the “Introduction to the Cardiac Room”
 - Proper set-up of transducers
 - Proper set-up and purging of syringe pumps
 - Understanding the role of the cardiac tech
- Manage, with appropriate supervision, the placement of intravenous and peripheral monitoring lines
 - Rational plan for placement location(s)
 - Basics of proper sedation of cardiac surgical patients

- Appropriately asking for assistance with placement
- Understanding potential complications

C. Intraoperative Care

- Know the basics of obtaining central access and placement of invasive monitors
 - Demonstrating proper “no touch” sterile technique
 - Demonstrating proper set up
 - Demonstrating knowledge of insertion techniques, landmarks, and potential complications
 - Demonstrating basic knowledge of PA catheter insertion including normal chamber pressures and recognition of waveforms
- Learn the basics elements of planning and performing separation from cardiopulmonary bypass
- Learn basic management for off-pump and minimally invasive cardiac procedures
- Actively participate in and learn to manage the transport of critically ill patients

D. Postoperative Care

- Assist in providing information on the patient's course to members of the postoperative patient care team

Medical Knowledge

A. Preoperative Assessment

- Discuss a “cardiac directed” preoperative evaluation
 - Interpretation of relevant symptoms and signs of cardiovascular disease
 - Focused and complete physical exam
 - Ruling out potential issues for TEE placement
 - Ruling out blood pressure differences in the upper extremities
 - Basic interpretation of cardiac testing
 - Cardiac cath results and interpretation
 - Coronary anatomy and significance
 - Echocardiographic findings
 - Tests of myocardial ischemia and viability
 - Review of all laboratory data
- Begin to understand the management of preoperative medications
- Develop a basic anesthetic plan

B. Intraoperative Care

- Understand the basics of a cardiac “induction”
 - Role of “high dose” opioids
 - Graded stimulus test for intubation

- Understand the basics of hemodynamic management as required through the different surgical phases
- Have level appropriate understanding of the following topics
 - Hemodynamic monitoring
 - Limitations
 - Complications
 - Indications/contraindications
 - Set up and use
 - Myocardial oxygen supply and demand
 - Systolic and diastolic myocardial function
 - Hemodynamic goals for coronary arterial, valvular, pericardial, and outflow tract pathologies
 - Cardiovascular medications – inotropes, vasopressors, vasodilators, antidysrhythmics
 - Mechanism of action
 - Side effects
 - Dosing
 - Indications
 - ACLS protocol
 - Defibrillation and cardioversion
 - Coagulation and anticoagulation
 - Heparin
 - Heparin substitutes
 - Protamine
 - Anti-platelet medications
 - Heparin induced thrombocytopenia
 - Tests of coagulation
 - PT, PTT
 - ACT
 - Transfusion therapy
 - Pathophysiology of massive transfusion
 - Hypothermia
 - Physiology of cardiopulmonary bypass
 - Placement of surgical cannulae for bypass
 - Components of the bypass machine
 - Significance of aortic cross clamping
 - Cardioplegia
 - Components
 - Methods of delivery
 - Surgical procedures
 - Anesthetic requirements
 - Time course of procedure
 - Potential risks and complications
 - Basic pacemaker use
 - Physiology of single lung ventilation
 - Intra-aortic balloon pumps

- Indications
- Contraindications
- Positioning
- Proper timing
- Basics of deep hypothermic circulatory arrest

Practice-based Learning and Improvement

- Review and be familiar with the rotation syllabus before starting
- Use existing literature and guidelines in developing a basic anesthetic plan
- Discuss their case(s) with their assigned attending in a timely fashion
- Assist in presenting any complications during the perioperative period to the Department of Anesthesia in a timely manner
- Assist in preparing a lecture on a selected topic to be presented to the Division of Cardiac Anesthesia

Interpersonal and Communication Skills

- Assist in counseling and educating patients and their families on basic anesthetic issues
- Learn to display effective communication skills with all members of the cardiac surgical team
- Learn how to give a proper comprehensive report to nursing staff and other team members who will provide postoperative care

Professionalism

- Learn to display compassion and respect when interacting with patients and their families
- Learn to display professional behavior when interacting with all members of the cardiac surgical team
- Throughout the perioperative period, learn to provide information about the patient's course to the attending anesthesiologist who cared for the patient with the resident

Systems-based Practice

- Learn how to use available hospital resources, including laboratories and cardiac testing tools, to effectively discuss a "cardiac directed" preoperative evaluation
- Learn how to manage information during the perioperative period
- Learn to provide perioperative cardiac patient care using safe and cost-effective methods

Evaluation

Residents will take an oral exam administered by members of the Division of Cardiac Anesthesia at the end of their rotation.

- This exam will cover appropriate CA-1 level material
- This exam will follow a similar protocol as that administered by the American Board of Anesthesiology
- The results of this exam will become a part of the resident's evaluation of performance during their rotation