

**UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL
ANESTHESIOLOGY RESIDENCY PROGRAM**

CARDIAC ANESTHESIOLOGY CA-2/ REQUIRED

GOALS AND OBJECTIVES

The cardiac anesthesiology rotation is a required 1-month rotation at the UMassMemorial-University Campus that occurs in the latter half of the CA-1 year, or during the CA-2 year. Decision as to start time is made on an individual resident basis and their progress in the CA-1 year. It should be noted that CA-1 residents are placed in cardiac cases early in their CA-1 year with senior residents so that they may become familiar with the use of invasive hemodynamic monitoring, become more comfortable with the use of vasoactive agents, and develop a better understanding of cardiac and respiratory physiology- all of which we believe will further their comfort level when caring for critically ill patients when taking call.

The CA-3 elective may be taken at the University campus for a period of an additional 5 months, or at the Rhode Island Hospital for a period of up to two (2) months.

Goals of Rotation

General:

The goal of the CA-2 rotation is to provide a broad exposure to all elements of anesthesia for adult cardiac surgery. The curriculum is designed to provide the resident with hands-on and intellectual background for perioperative care of patients for all forms of cardiac surgery, including coronary revascularization, valve replacement, valve repair, arrhythmia surgery, and placement of ventricular assist devices. The clinical experience is supplemented by case discussions with faculty and assigned readings, designed to build on the core didactic conferences that occur every 18 months.

COMPETENCIES

I. MEDICAL KNOWLEDGE

At the conclusion of the rotation, the resident should :

- Be able to describe normal anatomy and physiology of the heart
- Be able to describe the pathophysiology of ischemic heart disease, valvular heart disease, heart failure, intracardiac defects, arrhythmias and cardiac tamponade; explain the anesthetic implications for each, and discuss the rationale for induction and maintenance of anesthesia for each
- Have a basic understanding of the pathophysiology of thoracic aortic disease
- Be able to describe indications for, and interpretation of, non-invasive and invasive tests for assessing cardiac function and coronary anatomy, including transthoracic echocardiogram, cardiac catheterization, stress echocardiogram, and myocardial perfusion studies.
- Describe basic pharmacology and use of the following classes of drugs in cardiac patients, including indications, contraindications, drug interactions, appropriate dosing, side effects, and approach to handling complications of therapy:
 - antiarrhythmics
 - antihypertensives

- antianginal drugs
- inotropes
- vasoactive pressors
- vasodilators
- antithrombotics/anticoagulants and reversal agents
- electrolytes (potassium, magnesium, calcium)
- Know the indication for, and potential complications of, the following:
 - intraarterial catheterization
 - central venous catheterization
 - pulmonary artery catheterization
- Be able to describe the mechanism and anesthetic implications of cardiopulmonary bypass
- Be able to describe the common surgical events in an uncomplicated cardiac surgery case, and their implications (i.e. sternotomy, aortic cannulation, separation from bypass etc.)
- Explain similarities and differences between “on pump” vs. “off pump” cardiac surgery and anesthetic implications of each approach
- Be able to list common intraoperative problems and their treatments in an uncomplicated cardiac surgery case
- Understand the basic tenets of transfusion therapy
- Be familiar with the basics of trans-esophageal echocardiography (mechanism of function, indications and contraindications, placement, basic views)

II. PATIENT CARE

At the conclusion of the rotation, the resident should:

- Be able to perform a thorough preoperative assessment of the cardiac surgical patient and recognize the need for further work-up or consultation from other services
- Be able to elicit truly informed consent
- Be able to make informed decisions about the choice of monitoring, and develop a reasonable anesthetic plan
- Be able to insert, manage and interpret data from arterial catheters, central venous catheters and pulmonary artery catheters with minimal assistance in most cases
- Demonstrate basic skills of line insertion utilizing ultrasound guidance
- Be able to demonstrate techniques to prevent pre-operative and intraoperative cardiac ischemia, recognize ischemia when it occurs, and be able to respond quickly and correctly when it does occur
- Be able to manage anesthetics in patients undergoing straightforward surgery for common issues such as CAD, aortic and mitral regurgitation and stenosis
- Be able to insert a TEE safely, know when to abandon insertion attempt, and manipulate the probe to obtain basic views

III. PROFESSIONALISM

During this rotation the resident should:

- Demonstrate compassion and good communication with patients about to undergo cardiac surgery
- Respect cultural and religious beliefs of these patients, although they may differ from the norm
- Develop his/her ability to “connect” with the geriatric patient, the most common age group seen on the cardiac surgery service

IV. COMMUNICATION AND INTERPERSONAL SKILLS

During this rotation, the resident will:

- Demonstrate the ability to identify the stage of the surgical procedure by observations and interaction with the surgical team, including recognition of imminent initiation of and weaning from cardiopulmonary bypass.
- Develop and demonstrate the ability to provide understandable and timely explanations of procedures to patients
- Learn the importance of, and develop the ability to, communicate effectively and in a timely fashion to surgical team members
- Demonstrate the ability to communicate with all members of the cardiac team, including nurses, perfusionists, surgeons and technicians

V. SYSTEMS-BASED PRACTICE

During this rotation, the resident will:

- Develop an understanding of the role of the anesthesiologist in the preoperative preparation and intraoperative management of the cardiac surgery patient
- Develop an understanding of the role and concerns of the many other health care providers involved in the care of the cardiac surgery patient (surgical team, perfusionists, OR nursing team, ICU care teams, blood bank personnel etc.)
- Develop a basic understanding of the concept of “fast-track” anesthesia, and its implications in a cost effective practice (i.e. early extubation, early discharge etc.)

VI. PRACTICE-BASED LEARNING

At the conclusion of this rotation, the resident should be able to:

- Apply knowledge learned during the cardiac rotation to management of non-cardiac cases
- Access information to understand the evidence-based nature of many decisions made in the care of the cardiac surgical patient
- Facilitate education of medical students and healthcare professionals
- Recognize gaps in knowledge, and implement a plan to correct such gaps

