CARDIOTHORACIC VASCULAR – ADVANCED SPECIALTY

The Cardiothoracic rotation has been designed to offer the opportunity for residents in general anesthesia training to gain experience in planning and executing an anesthetic that considers patients with coronary artery, valvular and lung disease. At the completion of the rotation the resident will have a basic knowledge of the pathophysiology of coronary atherosclerotic disease, valvular heart disease, and pulmonary disease and apply these concepts when individualizing an anesthetic plan for a patient under going coronary artery bypass, repair or replacement of a heart valve, insertion of ventricular assist devices and pulmonary wedge resection or pneumonectomy. There should be an understanding of the indications of invasive monitoring as well as for transesophageal echocardiography and the need for vasoactive and inotropic pharmacology.

Goals

Patient Care:

- Demonstrate planning skills for anesthesia for cardiac surgery with CPB
- Demonstrate a plan for anesthesia for cardiac surgery without CPB I am not really crazy about these just a little locked up as to better phrasing

Medical Knowledge:

- Understand cardiac anatomy (vasculature, chambers, echo) and pulmonary anatomy (bronchoscopic anatomy)
- Understand cardiovascular and pulmonary physiology (including OLV)
- Understand pharmacology of vasoactive drugs (incl HPV, NO, oxygen)
- Understand indications for and risks of CABG, valve repair/replacement, redo sternotomy, pericardial window/pericardiectomy, and assist devices; open vs. thoracoscopic lung resection (including pneumonectomy), mediastinoscopy (including anterior mediastinal mass)
- Understand the role of premedication
- Understand indications for and risks of invasive monitoring
- Understand indications, risks, and complications of regional anesthesia for postop pain management
- Understand care and use of bronchoscopes, CPAP devices, PEEP devices

Interpersonal and Communication Skills:

- Communicate a cardiothoracic anesthesia plan to patients
- Communicate a plan to nursing staff and surgeons and perfusionists, including eliciting their participation as necessary

Professionalism:

- Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. Residents are expected to:
    - Demonstrate respect, compassion, and integrity; a responsiveness

to the needs of patients and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.

- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities. Demonstrate care and compassion with patients, and responsiveness to patient concerns regarding cardiothoracic anesthesia.

Practice Based Learning and Improvement:

- Understand the role of information technology in anesthesiology practice
- Utilize information technology to inform professional practice
- Understand Evidence Based Medicine theory and practice
- Understand the role of reflection in clinical performance
- Demonstrate reflective clinical performance
- Exhibit metacognitive and life long learning skills
- Educate other health professionals

System Based Learning:

- Understand the multidisciplinary organization and space utilization associated with safe, timely and successful performance of cardiothoracic anesthesia

Objectives

Patient Care:

- Formulate, defend and implement a plan for anesthesia for cardiac surgery with CPB
- Formulate, defend and implement a plan for anesthesia for cardiac surgery without CPB
- Formulate, defend and implement a plan for anesthesia for a thoracic surgical procedure
- Defend & Debate the choice of a specific drug
- Choose and defend reasoning role of premedication
- Debate indications for and risks of invasive monitoring
- Troubleshoot common complications of CPB
- bronchoscopes, CPAP devices, PEEP devices

Medical Knowledge:

- Explain the cardiac anatomy (vasculature, chambers, echo) and pulmonary anatomy (bronchoscopic anatomy)
- Explain cardiovascular and pulmonary physiology (including OLV) for each cardiac or pulmonary pathology or disease process

- Compare and contrast pharmacology of vasoactive drugs (incl HPV, NO, oxygen)
- Debate indications for and risks of CABG, valve repair/replacement, redo sternotomy, pericardial window/pericardiectomy, and assist devices; open vs. thoracoscopic lung resection (including pneumonectomy), mediastinoscopy (including anterior mediastinal mass)
- Debate indications, risks, and complications of regional anesthesia for postop pain management

Interpersonal and Communication Skills:

- Share and discuss a cardiothoracic anesthesia plan to patients that include the risks and possible complications
- Share and discuss a plan to and elicit help from nursing staff, surgeons and perfusionists

Professionalism:

- Demonstrates responsibility and physical and mental attentiveness in a positive and constructive manner
    - Negotiates conflict and exchanges with patients, colleagues and peers using respectful communication and conscientious behaviors
    - Arrives for clinical and learning responsibilities punctually, and prepared to perform, analyze and debate a variety of topics
    - Answers pages in a timely manner
    - Completes all rotations with a rating of satisfactory or better
- Demonstrates willingness to show consideration and appreciation for patients and co-workers
    - Negotiates resolution to interactions reflecting a lack of respect
    - Educates patients on creating a leadership role in their own care
    - De-escalates exchanges among colleagues and peers not demonstrating respectful and conscientious teamwork
    - Promotes and encourages respectful interactions
- Exhibits compassion, empathy and support in patient care and professional interactions
    - Demonstrates insight to patient vulnerability and communicates understanding
    - Interrupts and remediates communicates among peers and co-workers that diminish open, inclusive engagement in patient care and teamwork
    - Addresses the demands of social, economic, cultural and psychological needs of patients and coworkers while providing equanimity in patient care and therapeutic and work relationships
    - Directs and manages exchanges with patients, colleagues and peers using respectful communication and conscientious behaviors
- Demonstrates truthful and ethical standards in professional interactions and conduct
    - Adheres to departmental and university policy and procedures

- Completes all record keeping and medical records to reflect ethical standards
- Analyzes and teaches appropriate responses to ethically challenging situations
- Presents and receives information, concerns, and suggestions without bias or for personal gain
- Develops reports and encourages others to report concerns, errors, or potential problems in a clear manner to specific & appropriate personnel
- Demonstrates an understanding of the value of continuing education and life-long learning through membership to professional organizations including OMA & ASA
- Demonstrate care and compassion with patients, and responsiveness to patient concerns regarding cardiothoracic anesthesia

Practice based Learning and Improvement:

- Understand the role of information technology in anesthesiology practice
- Utilize information technology to inform professional practice
- Understand Evidence Based Medicine theory and practice
- Understand the role of reflection in clinical performance
- Demonstrate reflective clinical performance
- Exhibit metacognitive and life long learning skills
- Educate other health professionals
- Apply evidence based medicine materials to cardiothoracic anesthesia
- Review and synthesize previous and current OR experiences for ways to improve patient care

System Based Learning:

- Create a model for multidisciplinary organization and space utilization associated with safe, timely and successful performance of cardiothoracic anesthesia

Instructional Methods

Residents will be assigned to the Cardiac OR cases by the rotation chief.
Residents will discuss their preanesthetic workup, monitoring plan, anesthetic and postoperative plan with their attending anesthesiologist the day prior to the scheduled case.
Intraoperative didactic teaching

Assessment and Evaluation

Evaluation of the resident will be done by the Cardiac Anesthesiology faculty in accordance with departmental guidelines and will be reflected in the resident evaluation for the period in which the rotation was performed. Biweekly formative assessment will be given to the resident by Cardiac Anesthesiology faculty, and an end of rotation summative evaluation will be performed by the specialty rotation chief.

References and Resources

Cardiac Anesthesia, Third Edition, Hensley and Martin
Manual of Cardiac Anesthesia, Second Edition, Thomas
Cardiac Anesthesia, Third Edition, Kaplan
Anesthesia, Fifth Edition, Miller, R.
A Practical Approach to Transesophageal Echocardiography, Perrino and Reeves
Drugs for the Heart, Opie
Heart Physiology, Opie
Heart Disease, Sixth Edition, Braunwald