

**Adult Cardiothoracic  
Anesthesiology  
Fellowship Handbook**

**The University of Texas Medical  
Branch at Galveston**

**Fellow Name** \_\_\_\_\_ **Signature** \_\_\_\_\_

**Date Received** \_\_\_\_\_

# Goals and Objectives for Adult Cardiothoracic Anesthesiology Fellowship

## Patient Care

### Goal

Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows are expected to:

### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment of health problems of cardiothoracic surgical patients

### Objectives

1. Conduct accurate and comprehensive preoperative evaluations of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic planning and effectively communicate plans in a comprehensive and concise manner to supervising faculty
3. Maintain homeostatic patient status with appropriate, timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of necessity of faculty consultation.
4. Demonstrates awareness of the postoperative course of the adult cardiothoracic surgical patient and reports relevant changes in individual patients to faculty.
5. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient.

## Medical Knowledge

### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

### Competencies

Demonstrate knowledge of basic and clinical sciences relevant to care of

the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

Demonstration of medical knowledge in participation in didactic conferences, journal club, and echocardiographic interpretation sessions.

## **Objectives**

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students:

1. embryological development of cardiothoracic structures.
2. Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease
3. Pathophysiology, pharmacology, and clinical management of patients with respiratory disease, including pleural, bronchopulmonary, neoplastic, infectious, and inflammatory diseases
4. Pathophysiology, pharmacology and clinical management of patients with thoracic vascular, tracheal, esophageal, and mediastinal disease, including infectious, neoplastic, and inflammatory processes.
5. Noninvasive cardiovascular evaluation: ECG, TTE, TEE, stress testing, cardiovascular imaging
6. Cardiac catheterization procedures and diagnostic interpretation
7. Noninvasive pulmonary evaluation: pft's, blood gas and acid-base analysis, oximetry, capnography, pulmonary imaging
8. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
9. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
10. Perianesthetic monitoring: noninvasive and invasive
11. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
12. Extracorporeal circulation including myocardial preservation, effects of CPB on pharmacokinetics and pharmacodynamics, cardiothoracic, respiratory, neurological, metabolic, endocrine, hematological, renal, and thermoregulatory effects of CPB and coagulation/anticoagulation before, during, and after CPB.
13. Pharmacokinetics and pharmacodynamics of medications prescribed for management of hemodynamic instability: inotropes, chronotropes,

- lusitropes, vasoconstrictors, and vasodilators
14. Circulatory assist devices
  15. Pacemaker insertion and modes
  16. Cardiac surgical procedures: minimally invasive, valve repair and replacement, pericardial, neoplastic, heart and lung transplantation,
  17. Thoracic aortic surgery
  18. Esophageal surgery
  19. Pulmonary surgery: thoracoscopic, lung reduction, bronchopulmonary lavage, one-lung ventilation, lobectomy, pneumonectomy and bronchoscopy, endoscopic
  20. Postanesthetic critical care of adult cardiothoracic surgical patients
  21. Perioperative ventilator management: intraoperative anesthetic, and critical care ventilators and techniques.
  22. Pain management of adult cardiothoracic surgical patients
  23. Research methodology/ statistical analysis
  24. Quality assurance/ improvement
  25. Ethical and legal issues
  26. Practice management
  27. Perioperative echocardiographic evaluation and interpretation proficiency and concomitant ability to satisfactorily complete the National Board of Echocardiography examination for certification in perioperative echocardiography.

## **Practice- Based Learning and Improvement**

### **Goal**

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### **Competencies**

1. Identify strengths, deficiencies and limits in one's knowledge and expertise;
2. Set learning and improvement goals
3. Identify and perform appropriate learning activities
4. Systematically analyze practice, using quality improvement methods, and implement changes with the goal of practice improvement
5. Incorporate formative evaluation feedback into daily practice
6. Locate, appraise and assimilate evidence from scientific studies related to their patients' health problems

7. Use information technology to optimize learning
8. Participate in the education of patients, families, students, residents and other health professionals, as documented by evaluations of a resident's teaching abilities by faculty and/or learners

### **Objectives**

1. Participation in monthly QA and M&M conferences.
2. Facilitates learning of medical students and residents rotating on the cardiothoracic anesthesiology service.
3. Facilitation of monthly Cardiothoracic anesthesiology journal club with location of relevant scientific studies and appraisal of evidence and evidence-based incorporation of new information into clinical practice.
4. Appropriate incorporation of feedback from evaluations given by faculty into improvement of professional practice.

## **Systems Based Practice**

### **Goal**

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Residents are expected to:

### **Competencies**

1. Work effectively in various health care delivery settings and systems relevant to their clinical specialty
2. Coordinate patient care within the health care system relevant to their clinical specialty
3. Incorporate considerations of cost awareness and risk-benefit analysis in patient care
4. Advocate for quality patient care and optimal patient care systems
5. Work in interprofessional teams to enhance patient safety and improve patient care quality
6. Participate in identifying systems errors and in implementing potential systems solutions

### **Objectives**

1. Uses a systematic approach to reduce errors and improve patient care
2. Practices cost-effective anesthetic care without compromise of patient care

## **Professionalism**

### **Goal**

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

### **Competencies**

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

### **Objectives**

1. Demonstrates respect, compassion, integrity, honesty, and willingly acknowledges errors.
2. Demonstrates ethical behavior
3. Responsible attendance at didactic sessions
4. Dependable and punctual for clinical and didactic responsibilities

### **Interpersonal and Communication Skills**

#### **Goal**

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

#### **Competencies**

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member or leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

#### **Objectives**

1. Establishes effective relationship with patients and families
2. Collegial relationship with peers, faculty, surgical colleagues, and other team members
3. Clear, concise, and complete written records

## Schedule of Rotations

Fellows will spend the majority of their training at UTMB in the cardiothoracic operating room. Two months will be spent at the Methodist Hospital in Houston in the cardiothoracic OR and one month will be spent in the cardiothoracic surgical ICU at Methodist Hospital. A one month elective is available if desired by the fellow. A sample schedule follows:

<b>Month</b>	<b>Rotation</b>
July	UTMB CT OR
August	Methodist CT OR
September	Methodist CT OR
October	UTMB CT OR
November	UTMB CT OR
December	UTMB CT OR
January	UTMB CT OR
February	Methodist CT ICU
March	UTMB CT OR
April	elective rotation
May	UTMB CT OR
June	UTMB CT OR

Electives are available in pediatric cardiothoracic anesthesiology at Driscoll Children's Hospital in Corpus Christi, TX, an extra month at Methodist Hospital in the CT OR, and in research.

# Rotation Goals and Objectives

## UTMB Cardiothoracic Operating Room Rotation 1 - 9

### Month 1

#### Patient Care

##### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

##### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients.

##### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty
3. Maintain homeostatic patient status with appropriate, timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
4. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

#### Medical Knowledge

##### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

##### Competencies

Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

##### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease



1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

1. Set learning and improvement goals
2. Systematically analyze practice using quality improvement methods and implement changes toward practice improvement
3. Locate, appraise, and assimilate evidence from scientific studies related to patients health problems

### Objectives

1. Participation in monthly Quality Assurance and Morbidity and Mortality conference
2. Participation and presentation in monthly Journal club
3. Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service

## Systems Based Practice

### Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

### Competencies

1. Work in inter-professional teams to enhance patient safety and improve patient care quality
2. Participate in identifying systems errors and in implementing potential systems solutions

### Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team

## Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

### Competencies

- 1.Compassion, integrity, and respect for others
- 2.Responsiveness to patient needs that supersedes self-interest
- 3.Respect for patient privacy and autonomy
- 4.Accountability to patients, society, and the profession
- 5.Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

#### Objectives

- 1.Demonstrates respect, compassion, integrity, honesty
- 2.Willingly acknowledges errors
- 3.Demonstrates ethical behavior
- 4.Consistently attends didactic sessions and willingly participates in the learning process
- 5.Dependable and punctual for clinical responsibilities

### Interpersonal and Communication Skills

#### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

#### Competencies

- 1.Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
- 2.Communicate effectively with physicians, other health professionals, and health related agencies
- 3.Work effectively as a member or leader of a health care team or other professional group
- 4.Act in a consultative role to other physicians and health professionals
- 5.Maintain comprehensive, timely, and legible medical records

#### Objectives

- 1.Establishes effective relationship with patients and families
- 2.Collegial relationship with peers, faculty, surgical colleagues, nursing, and other team members
- 3.Clear, concise, and complete written records

## Month 2

### Patient Care

#### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

#### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients. Demonstrate incremental progress and development of abilities toward independent practice.

#### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty demonstrating progressive understanding of anesthetic management and patient pathophysiology
3. Maintain homeostatic patient status with appropriate anticipation and timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
4. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

### Medical Knowledge

#### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

#### Competencies

Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

#### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients

3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method
7. Demonstration of understanding of cardiac embryology and development
8. Demonstration of understanding of the echocardiographic evaluation of diastolic function - methods, uses, normal and abnormal findings, strengths and weaknesses of each method
9. Facility and demonstration of understanding of the echocardiographic evaluation of mitral and aortic regurgitation - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

1. Set learning and improvement goals
2. Systematically analyze practice using quality improvement methods and implement changes toward practice improvement
3. Locate, appraise, and assimilate evidence from scientific studies related to patients health problems
4. Identify strengths, weaknesses, and limits in knowledge and expertise
5. Incorporate formative evaluation feedback into daily practice
6. Participate in education of residents and medical students via verbal presentation in informal intraoperative setting

### Objectives

1. Participation in monthly Quality Assurance and Morbidity and Mortality conference
2. Participation and presentation in monthly Journal club
3. Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service
4. Incorporation of feedback from evaluations given by faculty, residents, nurses, and surgeons into improvement of practice

## Systems Based Practice

### Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

### Competencies

1. Work in inter-professional teams to enhance patient safety and improve patient care quality
2. Participate in identifying systems errors and in implementing potential systems solutions
3. Advocate for quality patient care and optimal patient care systems
4. Work effectively in both operating room and cardiology electrophysiology and catheterization suite settings

## Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team
3. Identify common systems errors in differing locations and communicate potential problems and solutions as evidenced by faculty, resident, and nursing evaluations

## Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

### Competencies

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

## Objectives

1. Demonstrates respect, compassion, integrity, honesty
2. Willingly acknowledges errors
3. Demonstrates ethical behavior
4. Consistently attends didactic sessions and willingly participates in the learning process
5. Dependable and punctual for clinical responsibilities

## Interpersonal and Communication Skills

### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

### Competencies

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member or leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

## Objectives

1. Establishes effective relationship with patients and families
2. Collegial relationship with peers, faculty, surgical colleagues, nursing, and other team members
3. Clear, concise, and complete written records

## Month 3

### Patient Care

#### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

#### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients. Demonstrate incremental progress and development of abilities toward independent practice.

#### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty demonstrating progressive understanding of anesthetic management and patient pathophysiology
3. Maintain homeostatic patient status with appropriate anticipation and timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
4. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

### Medical Knowledge

#### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

#### Competencies

Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

#### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients

3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method
7. Demonstration of understanding of cardiac embryology and development
8. Demonstration of understanding of the echocardiographic evaluation of diastolic function - methods, uses, normal and abnormal findings, strengths and weaknesses of each method
9. Facility and demonstration of understanding of the echocardiographic evaluation of mitral and aortic regurgitation - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
10. Demonstration of understanding of ultrasound physics via lecture presentation
11. Demonstrated understanding of pathophysiology of cardiopulmonary bypass, inflammation, weaning, coagulation effects
12. Familiarity with ethical issues in cardiothoracic surgery patients
13. Facility with remote location anesthetic management in cardiac catheterization and electrophysiology laboratory for adult cardiothoracic patients including complicating factors.
14. Exposure and familiarity with practice management for practitioners of adult cardiothoracic anesthesiology

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

1. Set learning and improvement goals
2. Systematically analyze practice using quality improvement methods and implement changes toward practice improvement
3. Locate, appraise, and assimilate evidence from scientific studies related to patients health problems
4. Identify strengths, weaknesses, and limits in knowledge and expertise
5. Incorporate formative evaluation feedback into daily practice
6. Participate in education of residents and medical students via verbal presentation in informal intraoperative setting
7. Identify and perform appropriate learning activities
8. Use information technology to optimize learning

### Objectives

1. Participation in monthly Quality Assurance and Morbidity and Mortality conference
2. Participation and presentation in monthly Journal club
3. Facilitation of monthly journal club including selection of relevant scientific studies and supervision of resident presentations
4. Lecture-based presentations to medical students, residents, and faculty in anesthesia departmental forum
5. Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service
6. Incorporation of feedback from evaluations given by faculty, residents, nurses, and surgeons into improvement of practice

## Systems Based Practice

## Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

## Competencies

1. Work in inter-professional teams to enhance patient safety and improve patient care quality
2. Participate in identifying systems errors and in implementing potential systems solutions
3. Advocate for quality patient care and optimal patient care systems
4. Work effectively in both operating room and cardiology electrophysiology and catheterization suite settings
5. Coordinate patient care with surgical and intensive care unit team for optimal patient benefit
6. Incorporate consideration of cost awareness and risk-benefit analysis of clinical practice

## Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team
3. Identify common systems errors in differing locations and communicate potential problems and solutions as evidenced by faculty, resident, and nursing evaluations
4. Practice cost-effective anesthetic care without compromise of patient care
5. Interface with surgical, nursing, and intensive care unit personnel to optimize coordination of patient care and transfer as documented by faculty and nursing evaluations

## Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

## Competencies

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
6. Demonstrate a commitment to ethical principles pertaining to provision of or withholding of clinical care, informed consent, confidentiality, and business practice

## Objectives

1. Demonstrates respect, compassion, integrity, honesty
2. Willingly acknowledges errors
3. Demonstrates ethical behavior
4. Consistently attends didactic sessions and willingly participates in the learning process
5. Dependable and punctual for clinical responsibilities

## Interpersonal and Communication Skills

### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:



## Competencies

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member of leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

## Objectives

1. Establishes effective relationship with patients and families
2. Creates ethically sound and therapeutic relationships with patients
3. Collegial relationship with peers, faculty, surgical colleagues, and other team members
3. Clear, concise, and complete written records

## Month 4

### Patient Care

#### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

#### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients. Demonstrate incremental progress and development of abilities toward independent practice.

#### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty demonstrating progressive understanding of anesthetic management and patient pathophysiology
3. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgement
4. Maintain homeostatic patient status with appropriate anticipation and timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
5. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

### Medical Knowledge

#### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

#### Competencies

Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

#### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.

2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method
7. Demonstration of understanding of cardiac embryology and development
8. Demonstration of understanding of the echocardiographic evaluation of diastolic function - methods, uses, normal and abnormal findings, strengths and weaknesses of each method
9. Facility and demonstration of understanding of the echocardiographic evaluation of mitral and aortic regurgitation - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
10. Demonstration of understanding of ultrasound physics via lecture presentation
11. Demonstrated understanding of pathophysiology of cardiopulmonary bypass, inflammation, weaning, coagulation effects
12. Familiarity with ethical issues in cardiothoracic surgery patients
13. Facility with remote location anesthetic management in cardiac catheterization and electrophysiology laboratory for adult cardiothoracic patients including complicating factors.
14. Exposure and familiarity with practice management for practitioners of adult cardiothoracic anesthesiology
15. Demonstration of understanding of the pathophysiology and management of patients with anterior mediastinal mass
16. Demonstration of understanding of the principles of myocardial ischemia, ischemic preconditioning and reperfusion
17. Familiarity with the pathophysiology and management of patients with thoracic aortic disease
18. Demonstration of understanding of the echocardiographic evaluation of aortic and mitral stenosis - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
19. Demonstration of understanding of the echocardiographic evaluation of the thoracic aorta - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

1. Set learning and improvement goals
2. Systematically analyze practice using quality improvement methods and implement changes toward practice improvement
3. Locate, appraise, and assimilate evidence from scientific studies related to patients health problems
4. Identify strengths, weaknesses, and limits in knowledge and expertise
5. Incorporate formative evaluation feedback into daily practice
6. Participate in education of residents and medical students via verbal presentation in informal intraoperative setting
7. Identify and perform appropriate learning activities
8. Use information technology to optimize learning
9. Participate in education of patients and families

### Objectives

1. Participation in monthly Quality Assurance and Morbidity and Mortality conference

2. Participation and presentation in monthly Journal club
3. Facilitation of monthly journal club including selection of relevant scientific studies and supervision of resident presentations to include appraisal of evidence and evidence-based incorporation of new information into clinical practice
4. Lecture-based presentations to medical students, residents, and faculty in anesthesia departmental forum
5. Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service
6. Incorporation of feedback from evaluations given by faculty, residents, nurses, and surgeons into improvement of practice

## Systems Based Practice

### Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

### Competencies

1. Work in inter-professional teams to enhance patient safety and improve patient care quality
2. Participate in identifying systems errors and in implementing potential systems solutions
3. Advocate for quality patient care and optimal patient care systems
4. Work effectively in both operating room and cardiology electrophysiology and catheterization suite settings
5. Coordinate patient care with surgical and intensive care unit team for optimal patient benefit
6. Incorporate consideration of cost awareness and risk-benefit analysis of clinical practice
7. Participate in quality assurance committees to actively advocate for quality in patient care

### Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team
3. Identify common systems errors in differing locations and communicate potential problems and solutions as evidenced by faculty, resident, and nursing evaluations
4. Practice cost-effective anesthetic care without compromise of patient care
5. Interface with surgical, nursing, and intensive care unit personnel to optimize coordination of patient care and transfer as documented by faculty and nursing evaluations
6. Use systematic analysis of clinical practice as it interfaces with nursing, surgical and intensive care unit practices to optimize patient care and transfer of care

## Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

### Competencies

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
6. Demonstrate a commitment to ethical principles pertaining to provision of or withholding of clinical care, informed consent, confidentiality, and business practice

## Objectives

1. Demonstrates respect, compassion, integrity, honesty
2. Willingly acknowledges errors
3. Demonstrates ethical behavior
4. Consistently attends didactic sessions and willingly participates in the learning process
5. Dependable and punctual for clinical responsibilities

## Interpersonal and Communication Skills

### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

### Competencies

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member of leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

### Objectives

1. Establishes effective relationship with patients and families
2. Creates ethically sound and therapeutic relationships with patients
3. Collegial relationship with peers, faculty, surgical colleagues, and other team members
3. Clear, concise, and complete written records

## Month 5

### Patient Care

#### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

#### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients. Demonstrate incremental progress and development of abilities toward independent practice.

#### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty demonstrating progressive understanding of anesthetic management and patient pathophysiology
3. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgement
4. Maintain homeostatic patient status with appropriate anticipation and timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
5. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

### Medical Knowledge

#### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

#### Competencies

Demonstrate an investigatory and analytic thinking approach to clinical situations. Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

#### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method
7. Demonstration of understanding of cardiac embryology and development
8. Demonstration of understanding of the echocardiographic evaluation of diastolic function - methods, uses, normal and abnormal findings, strengths and weaknesses of each method
9. Facility and demonstration of understanding of the echocardiographic evaluation of mitral and aortic regurgitation - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
10. Demonstration of understanding of ultrasound physics via lecture presentation
11. Demonstrated understanding of pathophysiology of cardiopulmonary bypass, inflammation, weaning, coagulation effects
12. Familiarity with ethical issues in cardiothoracic surgery patients
13. Facility with remote location anesthetic management in cardiac catheterization and electrophysiology laboratory for adult cardiothoracic patients including complicating factors.
14. Exposure and familiarity with practice management for practitioners of adult cardiothoracic anesthesiology
15. Demonstration of understanding of the pathophysiology and management of patients with anterior mediastinal mass
16. Demonstration of understanding of the principles of myocardial ischemia, ischemic preconditioning and reperfusion
17. Familiarity with the pathophysiology and management of patients with thoracic aortic disease
18. Demonstration of understanding of the echocardiographic evaluation of aortic and mitral stenosis - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
19. Demonstration of understanding of the echocardiographic evaluation of the thoracic aorta - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
20. Demonstration of understanding of the echocardiographic evaluation of the right heart - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
21. Demonstration of understanding of the echocardiographic evaluation of prosthetic valves - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
22. Demonstration of understanding of the echocardiographic evaluation of the adult patient with congenital heart disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

1. Set learning and improvement goals
2. Systematically analyze practice using quality improvement methods and implement changes toward practice improvement
3. Locate, appraise, and assimilate evidence from scientific studies related to patients health problems
4. Identify strengths, weaknesses, and limits in knowledge and expertise
5. Incorporate formative evaluation feedback into daily practice
6. Participate in education of residents and medical students via verbal presentation in informal

intraoperative setting

7. Identify and perform appropriate learning activities
8. Use information technology to optimize learning
9. Participate in education of patients and families

#### Objectives

1. Participation in monthly Quality Assurance and Morbidity and Mortality conference
2. Participation and presentation in monthly Journal club
3. Facilitation of monthly journal club including selection of relevant scientific studies and supervision of resident presentations to include appraisal of evidence and evidence-based incorporation of new information into clinical practice
4. Lecture-based presentations to medical students, residents, and faculty in anesthesia departmental forum
5. Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service
6. Incorporation of feedback from evaluations given by faculty, residents, nurses, and surgeons into improvement of practice

### Systems Based Practice

#### Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

#### Competencies

1. Work in inter-professional teams to enhance patient safety and improve patient care quality
2. Participate in identifying systems errors and in implementing potential systems solutions
3. Advocate for quality patient care and optimal patient care systems
4. Work effectively in both operating room and cardiology electrophysiology and catheterization suite settings
5. Coordinate patient care with surgical and intensive care unit team for optimal patient benefit
6. Incorporate consideration of cost awareness and risk-benefit analysis of clinical practice
7. Participate in quality assurance committees to actively advocate for quality in patient care

#### Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team
3. Identify common systems errors in differing locations and communicate potential problems and solutions as evidenced by faculty, resident, and nursing evaluations
4. Practice cost-effective anesthetic care without compromise of patient care
5. Interface with surgical, nursing, and intensive care unit personnel to optimize coordination of patient care and transfer as documented by faculty and nursing evaluations
6. Use systematic analysis of clinical practice as it interfaces with nursing, surgical and intensive care unit practices to optimize patient care and transfer of care

### Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

#### Competencies



- 1.Compassion, integrity, and respect for others
- 2.Responsiveness to patient needs that supersedes self-interest
- 3.Respect for patient privacy and autonomy
- 4.Accountability to patients, society, and the profession
- 5.Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
- 6.Demonstrate a commitment to ethical principles pertaining to provision of or withholding of clinical care, informed consent, confidentiality, and business practice

#### Objectives

- 1.Demonstrates respect, compassion, integrity, honesty
- 2.Willingly acknowledges errors
- 3.Demonstrates ethical behavior
- 4.Consistently attends didactic sessions and willingly participates in the learning process
- 5.Dependable and punctual for clinical responsibilities

### Interpersonal and Communication Skills

#### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

#### Competencies

- 1.Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
- 2.Communicate effectively with physicians, other health professionals, and health related agencies
- 3.Work effectively as a member or leader of a health care team or other professional group
- 4.Act in a consultative role to other physicians and health professionals
- 5.Maintain comprehensive, timely, and legible medical records

#### Objectives

- 1.Establishes effective relationship with patients and families
- 2.Creates ethically sound and therapeutic relationships with patients
- 3.Collegial relationship with peers, faculty, surgical colleagues, and other team members
- 3.Clear, concise, and complete written records

## Month 6

### Patient Care

#### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

#### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients. Demonstrate incremental progress and development of abilities toward independent practice.

#### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty demonstrating progressive understanding of anesthetic management and patient pathophysiology
3. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgement
4. Maintain homeostatic patient status with appropriate anticipation and timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
5. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

### Medical Knowledge

#### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

#### Competencies

Demonstrate an investigatory and analytic thinking approach to clinical situations. Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

#### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method
7. Demonstration of understanding of cardiac embryology and development
8. Demonstration of understanding of the echocardiographic evaluation of diastolic function - methods, uses, normal and abnormal findings, strengths and weaknesses of each method
9. Facility and demonstration of understanding of the echocardiographic evaluation of mitral and aortic regurgitation - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
10. Demonstration of understanding of ultrasound physics via lecture presentation
11. Demonstrated understanding of pathophysiology of cardiopulmonary bypass, inflammation, weaning, coagulation effects
12. Familiarity with ethical issues in cardiothoracic surgery patients
13. Facility with remote location anesthetic management in cardiac catheterization and electrophysiology laboratory for adult cardiothoracic patients including complicating factors.
14. Exposure and familiarity with practice management for practitioners of adult cardiothoracic anesthesiology
15. Demonstration of understanding of the pathophysiology and management of patients with anterior mediastinal mass
16. Demonstration of understanding of the principles of myocardial ischemia, ischemic preconditioning and reperfusion
17. Familiarity with the pathophysiology and management of patients with thoracic aortic disease
18. Demonstration of understanding of the echocardiographic evaluation of aortic and mitral stenosis - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
19. Demonstration of understanding of the echocardiographic evaluation of the thoracic aorta - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
20. Demonstration of understanding of the echocardiographic evaluation of the right heart - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
21. Demonstration of understanding of the echocardiographic evaluation of prosthetic valves - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
22. Demonstration of understanding of the echocardiographic evaluation of the adult patient with congenital heart disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
23. Demonstration of understanding of the echocardiographic evaluation of pericardial disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
24. Demonstration of understanding of the echocardiographic evaluation of cardiomyopathies - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

1. Set learning and improvement goals
2. Systematically analyze practice using quality improvement methods and implement changes toward practice improvement

3. Locate, appraise, and assimilate evidence from scientific studies related to patients health problems
4. Identify strengths, weaknesses, and limits in knowledge and expertise
5. Incorporate formative evaluation feedback into daily practice
6. Participate in education of residents and medical students via verbal presentation in informal intraoperative setting
7. Identify and perform appropriate learning activities
8. Use information technology to optimize learning
9. Participate in education of patients and families

#### Objectives

1. Participation in monthly Quality Assurance and Morbidity and Mortality conference
2. Participation and presentation in monthly Journal club
3. Facilitation of monthly journal club including selection of relevant scientific studies and supervision of resident presentations to include appraisal of evidence and evidence-based incorporation of new information into clinical practice
4. Lecture-based presentations to medical students, residents, and faculty in anesthesia departmental forum
5. Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service
6. Incorporation of feedback from evaluations given by faculty, residents, nurses, and surgeons into improvement of practice
7. Assimilate evidence from your own practice with the literature

#### Systems Based Practice

##### Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

##### Competencies

1. Work in inter-professional teams to enhance patient safety and improve patient care quality
2. Participate in identifying systems errors and in implementing potential systems solutions
3. Advocate for quality patient care and optimal patient care systems
4. Work effectively in both operating room and cardiology electrophysiology and catheterization suite settings
5. Coordinate patient care with surgical and intensive care unit team for optimal patient benefit
6. Incorporate consideration of cost awareness and risk-benefit analysis of clinical practice
7. Participate in quality assurance committees to actively advocate for quality in patient care

##### Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team
3. Identify common systems errors in differing locations and communicate potential problems and solutions as evidenced by faculty, resident, and nursing evaluations
4. Practice cost-effective anesthetic care without compromise of patient care
5. Interface with surgical, nursing, and intensive care unit personnel to optimize coordination of patient care and transfer as documented by faculty and nursing evaluations
6. Use systematic analysis of clinical practice as it interfaces with nursing, surgical and intensive care unit practices to optimize patient care and transfer of care

#### Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

#### Competencies

- 1.Compassion, integrity, and respect for others
- 2.Responsiveness to patient needs that supersedes self-interest
- 3.Respect for patient privacy and autonomy
- 4.Accountability to patients, society, and the profession
- 5.Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
- 6.Demonstrate a commitment to ethical principles pertaining to provision of or withholding of clinical care, informed consent, confidentiality, and business practice

#### Objectives

- 1.Demonstrates respect, compassion, integrity, honesty
- 2.Willingly acknowledges errors
- 3.Demonstrates ethical behavior
- 4.Consistently attends didactic sessions and willingly participates in the learning process
- 5.Dependable and punctual for clinical responsibilities

### Interpersonal and Communication Skills

#### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

#### Competencies

- 1.Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
- 2.Communicate effectively with physicians, other health professionals, and health related agencies
- 3.Work effectively as a member or leader of a health care team or other professional group
- 4.Act in a consultative role to other physicians and health professionals
- 5.Maintain comprehensive, timely, and legible medical records

#### Objectives

- 1.Establishes effective relationship with patients and families
- 2.Creates ethically sound and therapeutic relationships with patients
- 3.Collegial relationship with peers, faculty, surgical colleagues, and other team members
- 3.Clear, concise, and complete written records

## Month 7

### Patient Care

#### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

#### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients. Demonstrate incremental progress and development of abilities toward independent practice.

#### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty demonstrating progressive understanding of anesthetic management and patient pathophysiology
3. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgement
4. Maintain homeostatic patient status with appropriate anticipation and timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
5. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

### Medical Knowledge

#### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

#### Competencies

Demonstrate an investigatory and analytic thinking approach to clinical situations. Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

#### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method
7. Demonstration of understanding of cardiac embryology and development
8. Demonstration of understanding of the echocardiographic evaluation of diastolic function - methods, uses, normal and abnormal findings, strengths and weaknesses of each method
9. Facility and demonstration of understanding of the echocardiographic evaluation of mitral and aortic regurgitation - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
10. Demonstration of understanding of ultrasound physics via lecture presentation
11. Demonstrated understanding of pathophysiology of cardiopulmonary bypass, inflammation, weaning, coagulation effects
12. Familiarity with ethical issues in cardiothoracic surgery patients
13. Facility with remote location anesthetic management in cardiac catheterization and electrophysiology laboratory for adult cardiothoracic patients including complicating factors.
14. Exposure and familiarity with practice management for practitioners of adult cardiothoracic anesthesiology
15. Demonstration of understanding of the pathophysiology and management of patients with anterior mediastinal mass
16. Demonstration of understanding of the principles of myocardial ischemia, ischemic preconditioning and reperfusion
17. Familiarity with the pathophysiology and management of patients with thoracic aortic disease
18. Demonstration of understanding of the echocardiographic evaluation of aortic and mitral stenosis - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
19. Demonstration of understanding of the echocardiographic evaluation of the thoracic aorta - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
20. Demonstration of understanding of the echocardiographic evaluation of the right heart - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
21. Demonstration of understanding of the echocardiographic evaluation of prosthetic valves - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
22. Demonstration of understanding of the echocardiographic evaluation of the adult patient with congenital heart disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
23. Demonstration of understanding of the echocardiographic evaluation of pericardial disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
24. Demonstration of understanding of the echocardiographic evaluation of cardiomyopathies - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
25. Demonstration of understanding of the common artifacts and complications associated with perioperative echocardiography
26. Demonstration of understanding of the methods used in stress echocardiography, including strengths and weaknesses of each method
27. Demonstration of understanding of the echocardiographic evaluation of intracardiac tumors and masses - methods and principles involved in evaluation, normal and abnormal findings
28. Demonstration of understanding of ischemic mitral regurgitation, pathophysiology, echocardiographic evaluation, interventions and outcomes

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and

assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

- 1.Set learning and improvement goals
- 2.Systematically analyze practice using quality improvement methods and implement changes toward practice improvement
- 3.Locate, appraise, and assimilate evidence from scientific studies related to patients health problems
- 4.Identify strengths, weaknesses, and limits in knowledge and expertise
- 5.Incorporate formative evaluation feedback into daily practice
- 6.Participate in education of residents and medical students via verbal presentation in informal intraoperative setting
- 7.Identify and perform appropriate learning activities
- 8.Use information technology to optimize learning
- 9.Participate in education of patients and families

### Objectives

- 1.Participation in monthly Quality Assurance and Morbidity and Mortality conference
- 2.Participation and presentation in monthly Journal club
- 3.Facilitation of monthly journal club including selection of relevant scientific studies and supervision of resident presentations to include appraisal of evidence and evidence-based incorporation of new information into clinical practice
- 4.Lecture-based presentations to medical students, residents, and faculty in anesthesia departmental forum
- 5.Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service
- 6.Incorporation of feedback from evaluations given by faculty, residents, nurses, and surgeons into improvement of practice
- 7.Assimilate evidence from your own practice with the literature

## Systems Based Practice

### Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

### Competencies

- 1.Work in inter-professional teams to enhance patient safety and improve patient care quality
- 2.Participate in identifying systems errors and in implementing potential systems solutions
- 3.Advocate for quality patient care and optimal patient care systems
- 4.Work effectively in both operating room and cardiology electrophysiology and catheterization suite settings
- 5.Coordinate patient care with surgical and intensive care unit team for optimal patient benefit
- 6.Incorporate consideration of cost awareness and risk-benefit analysis of clinical practice
- 7.Participate in quality assurance committees to actively advocate for quality in patient care

### Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team
- 3.Identify common systems errors in differing locations and communicate potential problems and solutions as evidenced by faculty, resident, and nursing evaluations



4. Practice cost-effective anesthetic care without compromise of patient care
5. Interface with surgical, nursing, and intensive care unit personnel to optimize coordination of patient care and transfer as documented by faculty and nursing evaluations
6. Use systematic analysis of clinical practice as it interfaces with nursing, surgical and intensive care unit practices to optimize patient care and transfer of care

## Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

### Competencies

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

### Objectives

1. Demonstrates respect, compassion, integrity, honesty
2. Willingly acknowledges errors
3. Demonstrates ethical behavior
4. Consistently attends didactic sessions and willingly participates in the learning process
5. Dependable and punctual for clinical responsibilities
6. Demonstrate a commitment to ethical principles pertaining to provision of or withholding of clinical care, informed consent, confidentiality, and business practice

## Interpersonal and Communication Skills

### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

### Competencies

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member or leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

### Objectives

1. Establishes effective relationship with patients and families
2. Creates ethically sound and therapeutic relationships with patients
3. Collegial relationship with peers, faculty, surgical colleagues, and other team members
3. Clear, concise, and complete written records

## Month 8

### Patient Care

#### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

#### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients. Demonstrate incremental progress and development of abilities toward independent practice.

#### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty demonstrating progressive understanding of anesthetic management and patient pathophysiology
3. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgement
4. Maintain homeostatic patient status with appropriate anticipation and timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
5. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

### Medical Knowledge

#### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

#### Competencies

Demonstrate an investigatory and analytic thinking approach to clinical situations. Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

#### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method
7. Demonstration of understanding of cardiac embryology and development
8. Demonstration of understanding of the echocardiographic evaluation of diastolic function - methods, uses, normal and abnormal findings, strengths and weaknesses of each method
9. Facility and demonstration of understanding of the echocardiographic evaluation of mitral and aortic regurgitation - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
10. Demonstration of understanding of ultrasound physics via lecture presentation
11. Demonstrated understanding of pathophysiology of cardiopulmonary bypass, inflammation, weaning, coagulation effects
12. Familiarity with ethical issues in cardiothoracic surgery patients
13. Facility with remote location anesthetic management in cardiac catheterization and electrophysiology laboratory for adult cardiothoracic patients including complicating factors.
14. Exposure and familiarity with practice management for practitioners of adult cardiothoracic anesthesiology
15. Demonstration of understanding of the pathophysiology and management of patients with anterior mediastinal mass
16. Demonstration of understanding of the principles of myocardial ischemia, ischemic preconditioning and reperfusion
17. Familiarity with the pathophysiology and management of patients with thoracic aortic disease
18. Demonstration of understanding of the echocardiographic evaluation of aortic and mitral stenosis - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
19. Demonstration of understanding of the echocardiographic evaluation of the thoracic aorta - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
20. Demonstration of understanding of the echocardiographic evaluation of the right heart - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
21. Demonstration of understanding of the echocardiographic evaluation of prosthetic valves - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
22. Demonstration of understanding of the echocardiographic evaluation of the adult patient with congenital heart disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
23. Demonstration of understanding of the echocardiographic evaluation of pericardial disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
24. Demonstration of understanding of the echocardiographic evaluation of cardiomyopathies - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
25. Demonstration of understanding of the common artifacts and complications associated with perioperative echocardiography
26. Demonstration of understanding of the methods used in stress echocardiography, including strengths and weaknesses of each method
27. Demonstration of understanding of the echocardiographic evaluation of intracardiac tumors and masses - methods and principles involved in evaluation, normal and abnormal findings
28. Demonstration of understanding of ischemic mitral regurgitation, pathophysiology, echocardiographic evaluation, interventions and outcomes
29. Demonstration of understanding of the pathophysiology of the inflammatory response to cardiopulmonary bypass and therapeutic interventions
30. Demonstration of understanding of the management of the patient with cardiomyopathy, pathophysiology, management principles and therapeutic interventions and anesthetic management
31. Demonstration of understanding of cardiac transplant - pathophysiology of patient population, anesthetic goals and management, rejection, post transplant management and pathophysiology of the

transplanted patient

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

- 1.Set learning and improvement goals
- 2.Systematically analyze practice using quality improvement methods and implement changes toward practice improvement
- 3.Locate, appraise, and assimilate evidence from scientific studies related to patients health problems
- 4.Identify strengths, weaknesses, and limits in knowledge and expertise
- 5.Incorporate formative evaluation feedback into daily practice
- 6.Participate in education of residents and medical students via verbal presentation in informal intraoperative setting
- 7.Identify and perform appropriate learning activities
- 8.Use information technology to optimize learning
- 9.Participate in education of patients and families

### Objectives

- 1.Participation in monthly Quality Assurance and Morbidity and Mortality conference
- 2.Participation and presentation in monthly Journal club
- 3.Facilitation of monthly journal club including selection of relevant scientific studies and supervision of resident presentations to include appraisal of evidence and evidence-based incorporation of new information into clinical practice
- 4.Lecture-based presentations to medical students, residents, and faculty in anesthesia departmental forum
- 5.Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service
- 6.Incorporation of feedback from evaluations given by faculty, residents, nurses, and surgeons into improvement of practice
- 7.Assimilate evidence from your own practice with the literature

## Systems Based Practice

### Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

### Competencies

- 1.Work in inter-professional teams to enhance patient safety and improve patient care quality
- 2.Participate in identifying systems errors and in implementing potential systems solutions
- 3.Advocate for quality patient care and optimal patient care systems
- 4.Work effectively in both operating room and cardiology electrophysiology and catheterization suite settings
- 5.Coordinate patient care with surgical and intensive care unit team for optimal patient benefit
- 6.Incorporate consideration of cost awareness and risk-benefit analysis of clinical practice
- 7.Participate in quality assurance committees to actively advocate for quality in patient care

## Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team
3. Identify common systems errors in differing locations and communicate potential problems and solutions as evidenced by faculty, resident, and nursing evaluations
4. Practice cost-effective anesthetic care without compromise of patient care
5. Interface with surgical, nursing, and intensive care unit personnel to optimize coordination of patient care and transfer as documented by faculty and nursing evaluations
6. Use systematic analysis of clinical practice as it interfaces with nursing, surgical and intensive care unit practices to optimize patient care and transfer of care

## Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

### Competencies

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
6. Demonstrate a commitment to ethical principles pertaining to provision of or withholding of clinical care, informed consent, confidentiality, and business practice

## Objectives

1. Demonstrates respect, compassion, integrity, honesty
2. Willingly acknowledges errors
3. Demonstrates ethical behavior
4. Consistently attends didactic sessions and willingly participates in the learning process
5. Dependable and punctual for clinical responsibilities

## Interpersonal and Communication Skills

### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

### Competencies

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member or leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

## Objectives

1. Establishes effective relationship with patients and families
2. Creates ethically sound and therapeutic relationships with patients

3.Collegial relationship with peers, faculty, surgical colleagues, and other team members  
3.Clear, concise, and complete written records

## Month 9

### Patient Care

#### Goal

Fellows must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems experienced in the cardiothoracic surgery operating rooms. Fellows are expected to:

#### Competencies

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment and anesthetic management of cardiothoracic surgical patients. Demonstrate incremental progress and development of abilities toward independent practice.

#### Objectives

1. Conduct accurate and comprehensive preoperative evaluation of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic plans and effectively communicate plans in a comprehensive and concise manner to supervising faculty demonstrating progressive understanding of anesthetic management and patient pathophysiology
3. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgement
4. Maintain homeostatic patient status with appropriate anticipation and timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of the necessity of faculty consultation
5. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient

### Medical Knowledge

#### Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

#### Competencies

Demonstrate an investigatory and analytic thinking approach to clinical situations. Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

#### Objectives

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

1. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
2. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
3. Perianesthetic monitoring: noninvasive and invasive
4. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic patients
5. Facility with initial perioperative echocardiographic examination and ability to obtain all common views along with understanding and utility of different modes of echocardiography
6. Demonstration of understanding of echocardiographic evaluation of systolic function - methods, uses, strengths and weaknesses of each method
7. Demonstration of understanding of cardiac embryology and development
8. Demonstration of understanding of the echocardiographic evaluation of diastolic function - methods, uses, normal and abnormal findings, strengths and weaknesses of each method
9. Facility and demonstration of understanding of the echocardiographic evaluation of mitral and aortic regurgitation - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
10. Demonstration of understanding of ultrasound physics via lecture presentation
11. Demonstrated understanding of pathophysiology of cardiopulmonary bypass, inflammation, weaning, coagulation effects
12. Familiarity with ethical issues in cardiothoracic surgery patients
13. Facility with remote location anesthetic management in cardiac catheterization and electrophysiology laboratory for adult cardiothoracic patients including complicating factors.
14. Exposure and familiarity with practice management for practitioners of adult cardiothoracic anesthesiology
15. Demonstration of understanding of the pathophysiology and management of patients with anterior mediastinal mass
16. Demonstration of understanding of the principles of myocardial ischemia, ischemic preconditioning and reperfusion
17. Familiarity with the pathophysiology and management of patients with thoracic aortic disease
18. Demonstration of understanding of the echocardiographic evaluation of aortic and mitral stenosis - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
19. Demonstration of understanding of the echocardiographic evaluation of the thoracic aorta - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
20. Demonstration of understanding of the echocardiographic evaluation of the right heart - methods of evaluation, normal and abnormal findings, strengths and weaknesses of each method
21. Demonstration of understanding of the echocardiographic evaluation of prosthetic valves - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
22. Demonstration of understanding of the echocardiographic evaluation of the adult patient with congenital heart disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
23. Demonstration of understanding of the echocardiographic evaluation of pericardial disease - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
24. Demonstration of understanding of the echocardiographic evaluation of cardiomyopathies - methods and principles of evaluation, normal and abnormal findings, strengths and weaknesses of each method
25. Demonstration of understanding of the common artifacts and complications associated with perioperative echocardiography
26. Demonstration of understanding of the methods used in stress echocardiography, including strengths and weaknesses of each method
27. Demonstration of understanding of the echocardiographic evaluation of intracardiac tumors and masses - methods and principles involved in evaluation, normal and abnormal findings
28. Demonstration of understanding of ischemic mitral regurgitation, pathophysiology, echocardiographic evaluation, interventions and outcomes
29. Demonstration of understanding of the pathophysiology of the inflammatory response to cardiopulmonary bypass and therapeutic interventions
30. Demonstration of understanding of the management of the patient with cardiomyopathy, pathophysiology, management principles and therapeutic interventions and anesthetic management
31. Demonstration of understanding of cardiac transplant - pathophysiology of patient population, anesthetic goals and management, rejection, post transplant management and pathophysiology of the



transplanted patient

32. Demonstration of understanding of lung transplant - pathophysiology of the patient population, anesthetic goals and management, rejection, risks and benefits to use of cardiopulmonary bypass, post-transplant management

33. Understanding of the pathophysiology and management of post-cardiopulmonary bypass bleeding

34. Demonstration of understanding of the management of postoperative pain in the thoracic surgical patient - methods, strengths and weaknesses of each method, efficacy and effects on patient outcomes

35. Demonstration of understanding of management of the patient with esophageal disease, pathophysiology, management

36. Demonstration of understanding of the use, benefits, pathophysiology, risks of mechanical assist devices, including the use of echocardiography to assist in placement and optimization of these devices

37. Demonstration of understanding of the pathophysiology and management of the patient with pericardial disease

## Practice-Based Learning and Improvement

### Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

### Competencies

1. Set learning and improvement goals
2. Systematically analyze practice using quality improvement methods and implement changes toward practice improvement
3. Locate, appraise, and assimilate evidence from scientific studies related to patients health problems
4. Identify strengths, weaknesses, and limits in knowledge and expertise
5. Incorporate formative evaluation feedback into daily practice
6. Participate in education of residents and medical students via verbal presentation in informal intraoperative setting
7. Identify and perform appropriate learning activities
8. Use information technology to optimize learning
9. Participate in education of patients and families

### Objectives

1. Participation in monthly Quality Assurance and Morbidity and Mortality conference
2. Participation and presentation in monthly Journal club
3. Facilitation of monthly journal club including selection of relevant scientific studies and supervision of resident presentations to include appraisal of evidence and evidence-based incorporation of new information into clinical practice
4. Lecture-based presentations to medical students, residents, and faculty in anesthesia departmental forum
5. Facilitate orientation and learning of medical students and core rotation residents rotating on cardiothoracic anesthesia service
6. Incorporation of feedback from evaluations given by faculty, residents, nurses, and surgeons into improvement of practice
7. Assimilate evidence from your own practice with the literature

## Systems Based Practice

### Goal

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

## Competencies

1. Work in inter-professional teams to enhance patient safety and improve patient care quality
2. Participate in identifying systems errors and in implementing potential systems solutions
3. Advocate for quality patient care and optimal patient care systems
4. Work effectively in both operating room and cardiology electrophysiology and catheterization suite settings
5. Coordinate patient care with surgical and intensive care unit team for optimal patient benefit
6. Incorporate consideration of cost awareness and risk-benefit analysis of clinical practice
7. Participate in quality assurance committees to actively advocate for quality in patient care

## Objectives

1. Use systematic approach to patient care to evaluate practices and identify patient safety risks
2. Participate in division quality assurance conferences and communicate possible improvement methods to operating room personnel and surgical team
3. Identify common systems errors in differing locations and communicate potential problems and solutions as evidenced by faculty, resident, and nursing evaluations
4. Practice cost-effective anesthetic care without compromise of patient care
5. Interface with surgical, nursing, and intensive care unit personnel to optimize coordination of patient care and transfer as documented by faculty and nursing evaluations
6. Use systematic analysis of clinical practice as it interfaces with nursing, surgical and intensive care unit practices to optimize patient care and transfer of care

## Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

## Competencies

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
6. Demonstrate a commitment to ethical principles pertaining to provision of or withholding of clinical care, informed consent, confidentiality, and business practice

## Objectives

1. Demonstrates respect, compassion, integrity, honesty
2. Willingly acknowledges errors
3. Demonstrates ethical behavior
4. Consistently attends didactic sessions and willingly participates in the learning process
5. Dependable and punctual for clinical responsibilities

## Interpersonal and Communication Skills

### Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

## Competencies

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member or leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

#### Objectives

1. Establishes effective relationship with patients and families
2. Creates ethically sound and therapeutic relationships with patients
3. Collegial relationship with peers, faculty, surgical colleagues, and other team members
3. Clear, concise, and complete written records

# **Methodist Cardiothoracic Operating Room (One two-month Rotation)**

## **Specific Goals**

1. Sole participant (with faculty supervision) providing anesthetic care for cardiothoracic surgical patients
2. Participation in thoracic aortic procedures

## **1. Patient Care**

### **Goal**

Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows are expected to:

### **Competencies**

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment of health problems of cardiothoracic surgical patients

### **Objectives**

1. Conduct accurate and comprehensive preoperative evaluations of adult cardiothoracic surgical patients
2. Prepare evidence-based anesthetic planning and effectively communicate plans in a comprehensive and concise manner to supervising faculty
3. Maintain homeostatic patient status with appropriate, timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of necessity of faculty consultation.
4. Demonstration of appropriate technical prowess in performing procedures including organization of workspace, observance of universal precautions, sterile technique (when indicated) for placement of invasive hemodynamic monitors, postoperative pain procedures, perioperative echocardiographic procedures, lung isolation and ventilation, and other procedures necessary for the care of the adult cardiothoracic surgical patient.

## **2. Medical Knowledge**

### **Goal**

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

### **Competencies**

Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in development of the anesthetic plan and perioperative care.

### **Objectives**

Demonstration of knowledge via discussion, attendance of didactic sessions and teaching of residents and medical students: Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease

28. Pathophysiology, pharmacology, and clinical management of patients with respiratory disease, including pleural, bronchopulmonary, neoplastic, infectious, and inflammatory diseases
29. Pathophysiology, pharmacology and clinical management of patients with thoracic vascular, tracheal, esophageal, and mediastinal disease, including infectious, neoplastic, and inflammatory processes.
30. Noninvasive cardiovascular evaluation: ECG, TTE, TEE, stress testing, cardiovascular imaging
31. Cardiac catheterization procedures and diagnostic interpretation
32. Noninvasive pulmonary evaluation: pft's, blood gas and acid-base analysis, oximetry, capnography, pulmonary imaging
33. Preanesthetic evaluation and preparation of adult cardiothoracic patients.
34. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
35. Perianesthetic monitoring: noninvasive and invasive
36. Pharmacokinetics and pharmacodynamics of anesthetic medications prescribed for cardiothoracic

- patients
37. Extracorporeal circulation including myocardial preservation, effects of CPB on pharmacokinetics and pharmacodynamics, cardiothoracic, respiratory, neurological, metabolic, endocrine, hematological, renal, and thermoregulatory effects of CPB and coagulation/anticoagulation before, during, and after CPB.
  38. Pharmacokinetics and pharmacodynamics of medications prescribed for management of hemodynamic instability: inotropes, chronotropes, lusitropes, vasoconstrictors, and vasodilators
  39. Circulatory assist devices
  40. Pacemaker insertion and modes
  41. Cardiac surgical procedures: minimally invasive, valve repair and replacement, pericardial, neoplastic, heart and lung transplantation,
  42. Thoracic aortic surgery
  43. Esophageal surgery
  44. Pulmonary surgery: thoracoscopic, lung reduction, bronchopulmonary lavage, one-lung ventilation, lobectomy, pneumonectomy and bronchoscopy, endoscopic
  45. Perioperative echocardiographic evaluation and interpretation proficiency and concomitant ability to satisfactorily complete the National Board of Echocardiography examination for certification in perioperative echocardiography.

### **3.Practice- Based Learning and Improvement**

#### **Goal**

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Residents are expected to develop skills and habits to be able to :

#### **Competencies**

1. Identify strengths, deficiencies and limits in one's knowledge and expertise;
2. Set learning and improvement goals
3. Identify and perform appropriate learning activities
4. Systematically analyze practice, using quality improvement methods, and implement changes with the goal of practice improvement
5. Incorporate formative evaluation feedback into daily practice
6. Locate, appraise and assimilate evidence from scientific studies related to their patients' health problems
7. Use information technology to optimize learning
8. Participate in the education of patients, families, students, residents and other health professionals, as documented by evaluations of a resident's teaching abilities by faculty and/or learners

#### **Objectives**

1. Participation in monthly QA and M&M conferences.
2. Facilitates learning of medical students and residents rotating on the cardiothoracic anesthesiology service.
3. Facilitation of monthly Cardiothoracic anesthesiology journal club with location of relevant scientific studies and appraisal of evidence and evidence-based incorporation of new information into clinical practice.
4. Appropriate incorporation of feedback from evaluations given by faculty into improvement of professional practice.

### **4.Systems Based Practice**

#### **Goal**

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

#### **Competencies**

1. Work effectively in various health care delivery settings and systems relevant to their clinical specialty
2. Coordinate patient care within the health care system relevant to their clinical specialty
3. Incorporate considerations of cost awareness and risk-benefit analysis in patient care
4. Advocate for quality patient care and optimal patient care systems
5. Work in interprofessional teams to enhance patient safety and improve patient care quality

6. Participate in identifying systems errors and in implementing potential systems solutions

### **Objectives**

1. Uses a systematic approach to reduce errors and improve patient care
2. Practices cost-effective anesthetic care without compromise of patient care

## **5. Professionalism**

### **Goal**

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

### **Competencies**

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

### **Objectives**

1. Demonstrates respect, compassion, integrity, honesty, and willingly acknowledges errors.
2. Demonstrates ethical behavior
3. Responsible attendance at didactic sessions
4. Dependable and punctual for clinical and didactic responsibilities

## **6. Interpersonal and Communication Skills**

### **Goal**

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

### **Competencies**

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member or leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

### **Objectives**

1. Establishes effective relationship with patients and families
2. Collegial relationship with peers, faculty, surgical colleagues, and other team members
3. Clear, concise, and complete written records

# **Methodist Cardiothoracic Surgical Intensive Care Unit**

## **Patient Care**

### **Goal**

Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows are expected to:

### **Competencies**

Demonstrate patient care that is compassionate, appropriate, and effective for the treatment of health problems of cardiothoracic surgical patients

### **Objectives**

1. Maintain homeostatic patient status with appropriate, timely interventions in the adult cardiothoracic surgical patient and appropriate recognition of necessity of faculty consultation.
2. Demonstrates awareness of the postoperative course of the adult cardiothoracic surgical patient and reports relevant changes in individual patients to faculty.

## **Medical Knowledge**

### **Goal**

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

### **Competencies**

Demonstrate knowledge of basic and clinical sciences relevant to care of the adult cardiothoracic surgical patient. Consideration of the significance of coexisting disease in the care of the adult cardiothoracic surgical patient in perioperative care.

### **Objectives**

1. Pathophysiology, pharmacology, and clinical management of patients with cardiac disease, including cardiomyopathy, heart failure, cardiac tamponade, ischemic heart disease, acquired and congenital valvular disease, congenital heart disease, electrophysiological disturbances, neoplastic, and infectious heart disease
2. Pathophysiology, pharmacology, and clinical management of patients with respiratory disease, including pleural, bronchopulmonary, neoplastic, infectious, and inflammatory diseases
3. Pathophysiology, pharmacology and clinical management of patients with thoracic vascular, tracheal, esophageal, and mediastinal disease, including infectious, neoplastic, and inflammatory processes.
4. Noninvasive cardiovascular evaluation: ECG, TTE, TEE, stress testing, cardiovascular imaging
5. Noninvasive pulmonary evaluation: pft's, blood gas and acid-base analysis, oximetry, capnography, pulmonary imaging
6. Pharmacokinetics and pharmacodynamics of medications prescribed for medical management of adult cardiothoracic patients
7. Perianesthetic monitoring: noninvasive and invasive
8. Pharmacokinetics and pharmacodynamics of medications prescribed for management of hemodynamic instability: inotropes, chronotropes, lusitropes, vasoconstrictors, and vasodilators
9. Circulatory assist devices
10. Pacemaker insertion and modes
11. Postanesthetic critical care of adult cardiothoracic surgical patients
12. Perioperative ventilator management: intraoperative anesthetic, and critical care ventilators and techniques.
13. Pain management of adult cardiothoracic surgical patients
14. Quality assurance/ improvement
15. Ethical and legal issues

## **Practice- Based Learning and Improvement**

### **Goal**

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation

and life long learning. Residents are expected to develop skills and habits to be able to :

## **Competencies**

1. Identify strengths, deficiencies and limits in one's knowledge and expertise;
2. Set learning and improvement goals
3. Identify and perform appropriate learning activities
4. Systematically analyze practice, using quality improvement methods, and implement changes with the goal of practice improvement
5. Incorporate formative evaluation feedback into daily practice
6. Locate, appraise and assimilate evidence from scientific studies related to their patients' health problems
7. Use information technology to optimize learning
8. Participate in the education of patients, families, students, residents and other health professionals, as documented by evaluations of a resident's teaching abilities by faculty and/or learners

## **Objectives**

1. Participation in monthly QA and M&M conferences.
2. Facilitates learning of medical students and residents rotating on the cardiothoracic anesthesiology service.
3. Appropriate incorporation of feedback from evaluations given by faculty into improvement of professional practice.

## **Systems Based Practice**

### **Goal**

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

### **Competencies**

1. Work effectively in various health care delivery settings and systems relevant to their clinical specialty
2. Coordinate patient care within the health care system relevant to their clinical specialty
3. Incorporate considerations of cost awareness and risk-benefit analysis in patient care
4. Advocate for quality patient care and optimal patient care systems
5. Work in interprofessional teams to enhance patient safety and improve patient care quality
6. Participate in identifying systems errors and in implementing potential systems solutions

### **Objectives**

1. Uses a systematic approach to reduce errors and improve patient care
2. Practices cost-effective anesthetic care without compromise of patient care

## **Professionalism**

### **Goal**

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

### **Competencies**

1. Compassion, integrity, and respect for others
2. Responsiveness to patient needs that supersedes self-interest
3. Respect for patient privacy and autonomy
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

### **Objectives**

1. Demonstrates respect, compassion, integrity, honesty, and willingly acknowledges errors.
2. Demonstrates ethical behavior
3. Responsible attendance at didactic sessions
4. Dependable and punctual for clinical and didactic responsibilities

## **Interpersonal and Communication Skills**

### **Goal**

Residents must demonstrate interpersonal and communication skills that result in the effective exchange



of information and teaming with patients, their families, and professional associates. Residents are expected to:

## **Competencies**

1. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member or leader of a health care team or other professional group
4. Act in a consultative role to other physicians and health professionals
5. Maintain comprehensive, timely, and legible medical records

## **Objectives**

1. Establishes effective relationship with patients and families
  2. Collegial relationship with peers, faculty, surgical colleagues, and other team members
- Clear, concise, and complete written records

## ***Pediatric Cardiothoracic Anesthesiology - Driscoll Children's Hospital Corpus Christi, TX***

### **Specific Goals**

1. Pathophysiology, pharmacology, and clinical management of patients with congenital heart disease
2. Understanding of cardiac embryology
3. Noninvasive and Invasive cardiac monitoring for pediatric cardiac surgical patients
4. Pain management for pediatric cardiothoracic surgical patients

# **Adult Cardiothoracic Anesthesiology Fellowship Curriculum for 2012-13**

Conference Attendance is required for fellows and expected for faculty

**Echocardiography Practical Reviews on Thursday each week**

**Relevant Lectures from General Anesthesiology Residency Program Required**

**Monthly Cardiothoracic Anesthesiology Journal Club required**

**Quarterly Attendance at relevant surgical Morbidity and Mortality and/or cardiac catheterization conference required**

<b>Date</b>	<b>Topic</b>	<b>Speaker</b>
7/6/12	QA and M&M	C. McQuitty
7/13/12	Basics of Echocardiography and TEE Views	Wacher
7/20/12	Echocardiographic Evaluation of Systolic Function	C. McQuitty
7/27/12	Echocardiographic Evaluation of Mitral Stenosis	A. McQuitty
8/3/12	QA and M&M	C. McQuitty
8/10/12	Echocardiographic Evaluation of Aortic Stenosis	Ford
8/17/12	Echocardiographic Evaluation of Mitral Regurgitation	C. McQuitty
8/24/12	Echocardiographic Evaluation of Aortic Regurgitation	A. McQuitty
8/31/12	Echocardiographic Evaluation of the Aorta	Kinsky
9/7/12	QA and M&M	C. McQuitty
9/14/12	Cardiac Embryology	SCA Lecture
9/21/12	Ethical Issues in Cardiothoracic Anesthesiology	SCA Lecture
9/28/12	Practice Management in Cardiothoracic Anesthesiology	SCA Lecture
10/5/12	QA and M&M	C. McQuitty
10/12/12	Cardiac Anesthesia in the Cath Lab and Remote Locations	SCA Lecture
10/19/12	Professionalism in the Cardiothoracic Operating Room	SCA Lecture

<b>Date</b>	<b>Topic</b>	<b>Speaker</b>
10/26/12	Post-thoracotomy Pain Control	Ford
11/2/12	QA and M&M	C. McQuitty
11/9/12	Echocardiographic Evaluation of Diastolic Function	C. McQuitty
11/16/12	Physics of Echocardiography	Sreshta
11/23/12	Artifacts and Common Mistakes in Echocardiography	C. McQuitty
11/30/12	Thanksgiving Holiday	
12/7/12	QA and M&M	C. McQuitty
12/14/12	Echocardiographic Evaluation of Atrial Septal Defects	A. McQuitty
12/21/12	Echocardiographic Evaluation of Ventricular Septal Defects	A. McQuitty
12/28/12	Xmas Holiday	
1/4/13	QA and M&M	C. McQuitty
1/11/13	Doppler Echocardiography and Echo Safety	Sreshta
1/18/13	Echocardiographic Evaluation of the Right Heart	C. McQuitty
1/25/13	Stress Echocardiography	Ford
2/1/13	QA and M&M	C. McQuitty
2/8/13	Management of and Weaning from Cardiopulmonary Bypass	Wacher
2/15/13	Inflammation and Cardiopulmonary Bypass	Kinsky
2/22/13	Post-Cardiopulmonary Bypass Bleeding	A. McQuitty
3/1/13	QA and M&M	C. McQuitty
3/8/13	Echocardiographic Evaluation of Prosthetic Valves	C. McQuitty
3/15/13	Myocardial Ischemia and Preconditioning	Wacher
3/22/13	Echocardiographic Evaluation of Congenital Heart Disease	Kinsky
3/29/13	Echocardiographic Evaluation of the Cardiomyopathies	A. McQuitty
4/5/13	QA and M&M	C. McQuitty
4/12/13	Lung Transplant	Sreshta
4/19/13	Heart Transplant and Management of the Denervated Heart	Wacher
4/26/13	Echocardiographic Evaluation of Pericardial Disease	C. McQuitty

Date	Topic	Speaker
5/3/13	QA and M&M	C. McQuitty
5/10/13	Ventricular Assist Devices and Intraaortic Balloon Pumps	C. McQuitty
5/17/13	Management of the Cardiomyopathies	A. McQuitty
5/24/13	Echocardiographic Evaluation of Intracardiac Masses	Kinsky
5/31/13	Esophageal Surgery	Wacher
6/6/13	QA and M&M	C. McQuitty
6/14/13	Physiology and Management of Pericardial Disease	Ford
6/21/13	Circulatory Arrest	A. McQuitty
6/28/13	Anterior Mediastinal Mass	C. McQuitty

### **Fellow Responsibilities for Patient Care:**

Fellows are expected to perform a preoperative evaluation of their patients and write a preoperative evaluation in conjunction with any participating anesthesiology resident. The preoperative evaluation is placed in the medical record as part of the official anesthesiology preoperative evaluation. Preoperative orders are written by fellows in conjunction with participating anesthesiology residents. The fellow is required to evaluate operating room preparedness before the patient arrives for surgery. Peri-operative management is to be discussed with faculty on the night before the surgical case for all cases. Anesthetic management is initially chosen in conjunction with faculty and then allowed to progress with fellow's selection as their judgment matures with the oversight of faculty. Fellows are expected to make postoperative visits on all patients that they participate in the care of and write postoperative notes in the progress notes of patient charts.

### **Transitions of Care**

Fellows are expected to participate fully in transitions to assume care of patients and when transferring care to postoperative care providers. An appropriate summary of significant patient issues is expected to be both obtained when assuming care and when transferring care to other providers. A summary card will be provided listing a guide to the suggested

issues to be considered for each patient and is to be kept on the fellow's person during working hours. Fellows will be evaluated by intensive care unit faculty on their professionalism, communication, medical knowledge, and system based responses during transitions on a monthly basis.

### **Clinical Competence Committee**

The Clinical Competency Committee (CCC) is appointed by the Program Director and includes all faculty members in cardiothoracic anesthesiology at UTMB Galveston. The duties of the Clinical Competency Committee include:

- a. Review all training evaluations of resident performance.
- b. Preparation of the semiannual report of all residents' Milestones progress.
- c. Recommendations on resident progress including promotion, remediation and dismissal.

## **ANESTHESIOLOGY FELLOW LEAVE POLICY**

### **1. REQUIREMENTS: 20 working days total per year maximum allowed leave**

- a. This includes: vacation, sick leave, maternity leave, family emergencies, etc.
- b. All the time missed beyond the 20 days must be made up in order to complete the fellowship.

### **2. VACATION**

Each fellow receives 15 days vacation/year (includes vacation and personal days). This must be prescheduled six months in advance and in 5-day blocks. Missing more than one week from a four-week rotation is detrimental to your training and could result in not getting credit for that rotation. Vacation days do not transfer to the next year if not taken, but will remain as accrued vacation time on pay stub and will be paid for at the end of residency. If all days are not used by graduation, any remaining vacation time will be paid for in last paycheck.

### **3. SICK LEAVE**

Obviously, sick days are only to be used when you are too ill to perform your duties at work. Sick days are not extra vacation days. You must notify

faculty on call and the faculty you are scheduled to work with if you are not coming in to work and complete a leave request form.

#### **4. EXTENDED SICK LEAVES**

Illnesses that require absence from the residency for a period of > 1 week must be accompanied by a letter from the physician treating the resident explaining the nature of the illness and the expected duration of the leave.

#### **6. LEAVE OF ABSENCE NOT RELATED TO ILLNESS**

The absence must be approved by the Division Chairman and Program Director, and will be handled on a case-by-case basis. Time beyond the allowable leave must be completed prior to completion of the fellowship.

#### **7. MEETING TIME**

Fellows may attend one meeting (up to five clinical days off) during their fellow year. Administrative leave will be granted which does not go against the total of 20 days allowed by ABA requirements. All requests for meeting time must receive the approval of the Program Director. Fellows may use any available money in their individual Fellow Education Account for meeting expenses.

#### **8. HUMANITARIAN MISSIONS**

Approved time away from the OR for humanitarian missions will be divided between vacation and meeting time. The Fellow Education Account may be used to pay associated expenses.

#### **9. ADMINISTRATIVE LEAVE**

One administrative leave days may be granted for ABA board written examination and one day for the Jurisprudence exam after obtaining written approval from the Program Director. If these exams must be repeated, the fellow must use vacation time.

**YOU ARE NOT GUARANTEED TIME OFF WITHOUT AN APPROPRIATELY COMPLETED AND APPROVED LEAVE REQUEST.**

## 10. ACLS CERTIFICATION

ACLS certification is required. ACLS certification should be obtained during the yearly departmental ACLS course. ACLS certification can be scheduled with the UTMB education lab. All exceptions must be approved by the Program Director.

## BENEFITS, MEETING TIME AND FELLOW EDUCATION ACCOUNT GUIDELINES Effective July 2009 Fellow EDUCATION ACCOUNT (FEA)

Each year, \$2500 will be allocated to each resident's FEA. Funds are allocated upon employment date.

- Fellows may elect to have Late Room earnings added to FEA fund. This can provide additional funds for expenses associate with meetings, etc. *Taxes are not subtracted from late room earnings posted to the FEA.*
- FEA funds may be used primarily for medical books, journal subscriptions and travel to approved professional meeting(s). *You may not purchase equipment (i.e. –stethoscopes, nerve stimulators.*
- One PDA purchase will be allowed, but keep in mind, *any purchases over \$500 are UTMB property and must be returned to UTMB when you graduate.*
- Other expenses must be directly related to the resident's education and approved beforehand by the Program Director.
- 

## TEXTBOOKS

The Department provides free copies of Cardiac Anesthesiology by Joel Kaplan, and Feigenbaum's Echocardiography by Armstrong. Each fellow will also receive a personal subscription to E-echocardiography, an electronic echocardiography resource.

- UTMB has a state contract with Majors Scientific Books Co. and receives 20-22% off books and does not have to pay shipping charges or taxes. You may purchase through the internet and sometimes may find a better price but check the Department price before you make a purchase.



- For reimbursement of books purchased outside the Department, you must submit the original receipt with your name on it and a copy of the front of the book purchased. *We can not reimburse for taxes paid.*

## **SUPPLIES & EQUIPMENT**

The Department will reimburse for the following items:

- Protective Eyewear (maximum \$100)
- 1 pair of OR shoes at a (maximum of \$100/annually)

The Division will provide to each fellow:

- a computer for use at home (must be returned at end of fellowship per UTMB rules)
- lab coats
- digital pagers

## **STATE LICENSURE**

All residents must have either an institutional permit or Texas medical license. The department will pay Training Permit fees for your entire residency. You will need a valid license to enter the ABA board certification process after graduation (written boards are the first step). This DOES NOT have to be a Texas license if you plan to practice out of state. It can easily take 6 months to get a Texas License approved.

## **DEA & DPS LICENSE**

The UTMB Institutional DEA number cannot be used once Texas Medical Licensure is obtained, therefore, each resident is responsible for obtaining his/her individual Texas Department of Public Safety (DPS) and Federal DEA number.

- Copies of each of these documents must be provided to Carol Breish so you can submit to the UTMB GME office
- The Department will reimburse the fee for the *DEA (2 years) one time* and the *DPS (annual) up to a maximum of two times.*

## **EMPLOYEE LEAVE**

Residents may take up to five (5) clinical days during their training to attend meetings in their PGY-5 years. These days DO NOT count toward the 20 days maximum away from training allowed by the ABA. *Residents may attend up to a maximum of two meetings, using a total of five meeting days.*

- All requests for meeting time must receive written approval from the Program Director.
- Additional academic time to attend meetings may be granted at the Program Director's discretion to fellows presenting at meetings.
- Approved time away from the OR for humanitarian missions will be equally divided between vacation and meeting time. FEA funds may be used to pay associated expenses.

### **ADDITIONAL UTMB BENEFITS**

- Subsidized parking
  - UTMB Alumni Field House membership for less than \$200/yr
- Current information on salaries and benefits can be found by visiting the UTMB Graduate Medical Education website at [www.utmb.edu/gme/](http://www.utmb.edu/gme/).

### **Cardiothoracic Anesthesiology Evaluation Policy**

#### **Fellow Evaluation by Faculty & Faculty and Program Evaluation by Fellows**

1. CT Anesthesiology fellows shall be evaluated as outlined in UTMB GME General Information to Housestaff :

#### **D. HOUSE STAFF EVALUATION**

An institutional electronic evaluation system in New Innovations is used at UTMB and is mandatory for all residency programs including faculty and fellows. Each UTMB residency training program is to have a written procedure approved by the institution for regularly scheduled electronic evaluations of the performance of each resident by such program's Program Director as required by the ACGME's Institutional Requirements. The fact that these evaluations have been reviewed with the fellow will be documented in the individual's electronic file. Fellows will be notified by e-mail when their evaluation is completed. A log of the fellow viewing the evaluation will be maintained. These electronic evaluations are intended to

document the strengths and weaknesses of the fellow's knowledge and/or performance including the core competencies required by the ACGME. The training program is expected to notify the fellow at the earliest time possible of significant deficiencies in knowledge or performance, document plans for correction or improvement, and monitor success or lack thereof in doing so. Evaluations completed on each fellow will be retained in the electronic evaluation system permanently. Each fellow will be required to evaluate his/her residency program and faculty annually using the electronic evaluation system in New Innovations. Training is provided for New Innovations through Information Services during house staff orientation. Additional training is offered by Information Services.

2. Anesthesiology fellows have several different faculty evaluators for a single rotation. Timely documentation of fellow performance by the various faculty members is essential to generating a valid summative evaluation for the rotation. In order to comply with the UTMB New Innovations system which requires a single evaluator for each monthly rotation the following system has been implemented:

a. Departmental web-based daily fellow evaluations by faculty for rotations where fellows are assigned to multiple faculty members during a single month.

c. The Program Director receives summary reports of the daily evaluations of the fellows assigned. The Program Director is responsible for completing monthly New Innovations evaluations of the fellows.

3. The CT Anesthesia Faculty reviews each resident's performance every six months. The fellow will meet with the program director every six months to review their performance.

4. A linked New Innovations evaluation is generated for faculty evaluation each time a fellow evaluation is sent to faculty for completion. The fellow will also evaluate each faculty on that rotation monthly. All faculty evaluations are confidential. Only the Associate Dean for GME has access to information which links the evaluation and fellow evaluator. Composite summaries of evaluations without fellow identifiers will be sent to individual faculty, the Department Chairman and the Program Director approximately every six months

5. Fellows will also have formal clinical evaluation every six months in echocardiography and clinical practice where their examinations and clinical acumen are evaluated in a patient setting.
6. Each fellow will be required to evaluate his/her residency program and faculty annually using the electronic evaluation system in ClinWeb. In addition, periodic ACGME Resident Surveys will be completed when provided. Departmental surveys specific to Anesthesiology are distributed annually.

## **Faculty Supervision of Fellows and Documentation**

### **Fellow Supervision**

1. Teaching staff schedules are structured to ensure adequate supervision is readily available to anesthesiology fellows on duty 24 hours a day, 365 days per year.
2. Fellows are provided with rapid, reliable system for communicating with supervising faculty. All faculty carry personal pagers and cell phones.
3. Faculty supervision of fellows and residents must always meet the standards of medical direction as defined by Medicare regulations.
4. Individual fellow supervision is customized to provide for progressively increasing responsibility according to their level of education, ability and experience.
5. The level of responsibility accorded to each fellow is determined by the teaching staff on an individual basis.
6. Faculty and fellows are educated to recognize the signs of fatigue and apply policies to prevent and counteract the potential negative effects. Teams of in-house residents and faculty are on duty so breaks can be provided as needed.

Details regarding policies and procedures for documentation of faculty services to the patients can be found in the Departmental Compliance Plan (Billing Compliance Plan: Documentation and Verification of the Anesthetic Care, 3rd edition).

### **Substance Abuse Policy Department of Anesthesiology**

Anesthesiology faculty and residents have access to the Employee Assistance Program (EAP) and the Physician's Health and Rehabilitation Committee (PHRC). The former, EAP, requires voluntary participation by chemically dependent employees, and the latter (PHRC), confidentially investigates voiced concerns from anybody in the UTMB community regarding a possible chemically dependent individual. The PHRC investigates and makes recommendations to departmental chairs, who act upon these recommendations as he/she sees fit.

Anesthesiologists have a far greater incidence of recidivism when compared with all other treated, chemically dependent individuals. Additionally, the drug of choice, fentanyl is an extremely potent, and too often fatal, drug of addiction. Our work environment tends to be continuously stressful and drugs are readily available for abuse.

**The Department of Anesthesiology of UTMB believes that the best treatment of chemical dependency is prevention.**

All residents are required, and their significant others urged, to attend an annual educational session led by our chair. The session includes the video "Wearing Masks", that was developed by the Association of Anesthesia Program Directors to increase awareness of chemical dependency in anesthesiologists.

Effective 2004, all first year residents will be supplied with and required to read, "Drug Impaired Professionals", by Robert Coombs. This book tells the stories of 120 impaired professionals, and hopefully will be an eye opener for our residents.

Narcotic utilization in our department is reviewed monthly, by drugs used, quantity of same, and correlation with subspecialty usage norms. Returned drugs are randomly screened by reflectance spectroscopy, such that all faculty, residents and CRNAs are assessed at least once per month.

The Department of Anesthesiology adheres to the UTMB Handbook of Operating Procedures, Policy 8.1.7, "Evaluation and Treatment of Impaired Physicians." The UTMB at Galveston recognizes that its physicians and resident physicians who are impaired are individuals that need help. Additionally, the medical staff realizes that an impaired physician can

prevent the University from meeting the commitment of providing for high quality patient care in a safe environment.

An individual suspected of chemical dependency will be summoned to a meeting with the departmental chair (or vice-chair), program director, and the departmental narcotics compliance co-coordinator. This meeting will occur immediately upon the suspicion that a dependency issue is possible, and all patient care privileges will immediately be suspended until the issue is resolved. If the individual admits to an addiction problem, we will aggressively seek out immediate help, ranging from spousal and other family support, to voluntary enrollment in a treatment facility (i.e. Talbott Recovery Campus). It is imperative that the addicted physician's state of mind (end of career concerns, suicide, etc) be assessed prior to leaving the aforementioned meeting. If an individual is suspected of being under the influence of drugs or alcohol while on duty at the hospital, he/she will be immediately escorted to Employee Health Services or the ER to be seen for medical evaluation, testing for drugs or alcohol and mandatory psychiatric evaluation, as per UTMB policy. Physician impairment while providing patient care presents a clear danger to patient safety and cannot be tolerated. Corrective action for unsatisfactory performance, up to and including probation or immediate discharge from residency program will be enforced as outlined in UTMB Housestaff Work Agreement-Section III, E.2, "Unsatisfactory Performance".

The Department of Anesthesiology and UTMB regards the misuse or abuse of drugs or alcohol by a physician as conduct subject to disciplinary action. Per UTMB Policy 8.1.7, UTMB Handbook of Operating Procedures, "The authority of UTMB over resident physicians at UTMB extends at least to restricting their access to UTMB patients and, if necessary, discharging them from the training program, and reporting the individual to the Texas State Board of Medical Examiners (TSBME) for endangering the lives of patients and posing a continuing threat to the public welfare. The authority also includes reporting the restriction and the reasons for it to the associate dean for graduate medical education. The resident physician may be prohibited from participating in any clinical activities at the University if found to be impaired and not involved in an ongoing monitored rehabilitation program".

The individual has the right of appeal, as outlined in the UTMB Housestaff Work Agreement-Section III, Due Process/Grievance.

## **Duty Hours**

The fellowship program follows the ACGME Duty Hour Requirements: Duty hours are limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities. Fellows are provided with 1 day in 7 free from all educational and clinical responsibilities, averaged over a four-week period, inclusive of call. One day is defined as one continuous 24- hour period free from all clinical, Educational, and administrative activities. A 10 hour time period for rest and personal activities are provided between all daily duty periods.

## **On Call Activities**

This fellowship has no in-house call requirements. All call duties are home call. At-home call (pager call) is defined as call taken from outside the assigned institution. Continuous on-site duty does not exceed 24 consecutive hours. Fellows may remain on duty for up to 6 additional hours to participate in didactic activities, maintain continuity of medical and surgical care, transfer care of patients. The frequency of at-home call is not subject to the every third night limitation. However, at-home call is not be so frequent as to preclude rest and reasonable personal time for each resident. Fellows taking at-home call are provided with 1 day in 7 completely free from all educational and clinical responsibilities, averaged over a 4-week period. When fellows are called into the hospital from home, the hours fellows spend in-house are counted toward the 80-hour limit. As the call case-load is light for this program, the fellow is on call for three out of four weeks from home with one week completely free of call obligations

The program director and the faculty monitor the demands of at-home call in their programs and make scheduling adjustments as necessary to mitigate excessive service demands and/or fatigue.

## **Moonlighting**

Because fellow education is a full-time endeavor, the program director ensures that moonlighting does not interfere with the ability of the fellow to achieve the goals and objectives of the educational program. The program director complies with the sponsoring institutions written policies and procedures regarding moonlighting, in compliance with the Institutional Requirements III. D.1.k. Moonlighting outside of the sponsoring institution is not allowed by this program. Moonlighting that occurs within the fellowship program and/or the sponsoring institution or the non-hospital sponsor's

primary clinical site(s), i.e., internal moonlighting, is counted toward the 80-hour weekly limit on duty hours.

### **Oversight**

Back-up support systems are provided when patient care responsibilities are unusually difficult or prolonged, or if unexpected circumstances create fellow fatigue sufficient to jeopardize patient care.

### **Grievance Procedure**

Concerns about individual faculty are brought to the program director who acts as the mediator for any disputes or complaints. Initial complaints are enmeshed in general residency evaluation feedback to the faculty in order to preserve confidentiality, as this is a small fellowship program. Complaints are presented to the faculty by the program director and a corrective plan is formalized and agreed upon. Persistent complaints will result in review of appropriateness of faculty for participation in fellow education program with program director and Anesthesiology department chair and inclusion of complaints in faculty performance record. The origin of the concern is protected as much as is possible, however, UTMB has a formal policy addressing the prevention of retaliation and intimidation by supervising personnel which results in formal reprimands up to and/or inclusive of termination for abusive employees. Concerns with the program director are handled in a similar fashion but with the Anesthesiology department chair acting as the mediator between the fellow and program director. Complaints about patient management safety can be anonymously entered into the UTMB patient safety network where they will be reviewed by the Risk Management department of UTMB and will be evaluated by experts with feedback given to personnel involved.