

## HVICU Curriculum

**Goal:** The purpose of this rotation is to train cardiology fellows to competently care for patients in the ICU for cardiovascular disorders and acute coronary care.

### **Objectives:**

By the end of the first month rotation the fellow should:

1. Be capable of managing patients with acute coronary syndromes, ST-elevation MI, cardiogenic shock, acute decompensated congestive heart failure, symptomatic arrhythmias, hypertensive crisis, infective endocarditis, aortic dissection, pericardial tamponade and pulmonary embolism, under the guidance of the cardiology inpatient attending. (PC, MK, PBLI, ISC, P, SBP)
2. Understand and appropriately use hemodynamic monitoring and intra-aortic balloon counterpulsation (PC, MK)
3. Be capable of managing medical comorbidities that acutely ill cardiovascular patients manifest, including renal failure, respiratory failure and infections/sepsis. The fellow should be familiar with the hospital's sepsis protocol. (PC, MK, BBLI, ISC, P, SBP)
4. Understand the indications for thrombolytic, percutaneous, and surgical therapy of acutely ill cardiovascular patients. (PC, MK)
5. Be familiar with (and participate in) the pre- and post-operative management of patients with cardiovascular disease, including those post-CABG, valvular surgery, vascular surgery, cardiac transplant, and implantation of cardiac assist devices. (PC, MK, ISC, P)
6. Be able to assist with the initiation of ECMO therapy and the care of patients during this therapy (PC, MK)
7. Be able to identify and help manage postoperative complications. (MK, PC, ISC, P, PBLI, SBP)
8. Be able to interact with HVI physicians and personnel on other services in a professional manner, and expedite care for all HVICU patients. (P, PC, ISC, MK)
9. Interact with patients and their families in a compassionate and caring manner, observing confidentiality, and obtaining informed consent for procedures. (P, PC, MK, ISC)

By the end of the second month rotation the fellow should:

1. Be capable of taking on more of a leadership role in the management of patients on the cardiology services in the HVICU. (PC, MK, PBLI, ISC, P, SBP)
2. Be able to independently perform more bedside procedures in the HVICU. (PC, MK, PBLI, ISC, P)
3. Assume more responsibility in the teaching of medical residents and students, as well as physician extenders working in the HVICU. The fellow should be viewed as a leader and role model to these trainees.
4. Take on more responsibility in the postoperative care of CT surgery patients under the guidance of the HVICU Intensivist. (PC, MK, ISC, PBLI, P)
5. Assume a significant role in relaying information to the HVICU patients and their families regarding their disease process and therapy plans. (ISC, P, SBP, PBLI, PC, MK)

### **Fellow Responsibilities/Duties:**

1. The HVICU fellow will round at 8:30 a.m. with the Acute Cardiology ward team (Mon-Fri). After completion of cardiology rounds, the fellow will join the Heart Failure service rounds in the HVICU. If their rounds have already been completed, the HVICU fellow will receive sign-out from the Heart Failure fellow/attending. The HVICU fellow will provide primary coverage throughout the day (Mon-Fri) for all the Cardiology ICU-level patients.
2. After completion of Acute Cardiology and Heart Failure service rounds, the HVICU cardiology fellow will join the HVICU Intensivist team during their rounds on post-op CT surgery patients, and those with mechanical assist devices. The fellow will also go to the OR at least once during the month to witness a CT surgical procedure. These activities are designed to enhance the fellow's surgical critical care experience.
3. The HVICU cardiology fellow will also perform all cardiology consults requested on the HVICU patients. The fellow will then staff those consults with the cardiology or EP consult attending.
4. The HVICU cardiology fellow, when able, will respond to Heart Alerts.

### **Faculty Supervision:**

HVICU Cardiology patient care by the fellow will be supervised in person or discussed by phone with the appropriate service attending. Consults will be staffed with a cardiology attending. Fellow's care of surgical HVICU patients will be supervised by the Intensivist attending, or a CT surgery attending.

### **Procedures/Patient Characteristics/Disease Mix/Types of Encounters:**

Patients in the HVICU can be on any of the HVI services, including acute cardiology, heart failure, CT surgery, vascular surgery or interventional radiology. The disease mix is both complex and varied, including patients' post-cardiac transplant, implantation of mechanical assist devices, and those on ECMO. Patients with congenital heart disease and complex arrhythmias are also included. (see Objectives section for further description of disease types). There is an appropriate gender mix, and wide span of ages seen. The ethnicity of our patient population is fairly homogenous, but the socioeconomic backgrounds are diverse. Patients in the HVICU frequently require central line placement, intubation, Swan-Ganz hemodynamic monitoring, coronary catheterization and PCI, as well as IABP placement, and initiation of ECMO. The HVICU fellow is also required to aid in electrical or chemical cardioversions, and placement of temporary pacing wires for heart rhythm management. The HVICU fellow is also involved in the pre- and post-op management of patients' going for CT surgery (CAGB, valve surgery, mechanical assist device or cardiac transplant) or vascular surgery (carotid, aortic or peripheral).

### **Evaluations:**

The fellow will be evaluated by the Acute Cardiology attending, Heart Failure attending and ICU Intensivist at the end of the month's rotation. Feedback will be given to the fellow verbally and in writing. The written evaluation is based on the ACGME 6 core competencies. The fellows have taken part in the design of this rotation, and development of the curriculum.

They are also given the opportunity to evaluate the curriculum and rotation. The fellows also confidentially evaluate the attendings.

### **Teaching Methods:**

Informal teaching at the bedside is provided by the Cardiology, Heart Failure, and ICU Intensivist attending during daily rounds. The fellow also learns by instructing residents, medical students, and physician extenders working in the HVICU. The fellow educates the ICU patients and their families regarding their cardiac problems. The fellow will attend the didactic sessions presented by the cardiology attending on the Acute and Heart Failure services, as well as the HVICU conference. Self-study is also encouraged.

### **HVICU Conference Topics**

1. A-Fib, Surgical Approach
2. A-Fib, Interventional Approach
3. Post operative mesenteric ischemia (challenges in diagnoses and management)
4. Fulminant myocarditis
5. Endocarditis
6. Role of TEE in early hemodynamic management of CT surgery patients
7. ECMO Part I
8. ECMO Part II
9. ECMO Part III
10. MCS Part I
11. MCS Part II
12. MCS Part III
13. MCS Part IV
14. ICU Management of Ruptured AAA
15. Acute Extremity Ischemia in ICU
16. Management of Post-Op Aortic Patients
17. Use of Thrombolytics (arterial/venous)
18. ARDS
19. VAP
20. Post-Op Hemodynamic Management of Inotropic Therapy
21. IABP
22. MARS Therapy
23. Acute Renal Failure Post Cardiac Surgery
24. Neurological Complications Following Open Heart Surgery
25. Paralytics and Sedation (conscious and deep sedation) in the ICU
26. Post-Op Anticoagulation Strategies
  - In general after thoracic or open heart surgery
  - Device procedures
  - DVT prophylaxis
  - On CRRT/MARS