Description of Rotation or Educational Experience
The CICU/Inpatient/Consultation service at the VA is designed to allow the fellow to acquire the knowledge and skills necessary to provide optimal care for cardiac patients in the intensive care unit and step-down unit, as well as act as a cardiac consultant for patients in a busy tertiary care medical center. There will be opportunity to learn appropriate triage of patients as well as to coordinate interdisciplinary and sub-specialty care. The fellow will be expected to develop their skills in clinical care, judgment, and teaching. The fellow will be expected to develop the skills necessary to supervise a cardiology inpatient service as well as a consultation service.

One faculty member is assigned to the inpatient/consultation cardiology service for a 2 week period of time. This faculty will be the attending of record on all inpatient admissions and cardiology consultations and will have primary supervisory responsibility for the cardiology fellow on service. Daily rounds, which serve as a significant learning tool for the entire team, will begin between 7-8 am and all team members are expected to be present. The fellow must be available from 7 am through 5 pm each weekday to supervise housestaff and students, and for consultations from inpatient services and the emergency room. After 5 pm any new admissions will be the responsibility of the on-call fellow. All nights and weekends are covered by rotating call among the fellows. The fellow assigned to the service is expected to see and examine all intensive care unit admissions. They will also leave a complete written history and physical examination on these patients. They are expected to hear presentations on all other admissions from the housestaff and students and offer their insight prior to staffing with the attending physician. The fellow is expected to see and evaluate all Cardiology consultation patients on the day of consultation with the assistance of the resident on the consultation service if one is present. The fellow is expected to take an active role in patient care and over time will learn to independently manage the team, and especially will be independently managing the consultation service. The fellow will also be expected to teach the residents/interns/students on a daily basis as opportunity presents itself.

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
- Gain clinical experience in the prevention, evaluation and management of inpatients with, but not limited to, the following: chronic coronary heart disease, congestive heart failure, arrhythmias, acute myocardial infarction and other acute ischemic syndromes, lipid disorders, hypertension, cardiomyopathy, valvular heart disease, pulmonary heart disease and pulmonary embolism, peripheral vascular disease, infections and inflammatory heart disease, cardiovascular rehabilitation.
• Gain clinical experience in the prevention, evaluation and management of inpatients with the following: pericardial disease.
• Gain clinical experience in the performance of the following: elective cardioversion; insertion and management of temporary pacemakers, including transvenous and transcutaneous; programming and follow-up surveillance of permanent pacemakers; bedside right heart catheterization;
• Gain clinical experience in utilization of intra-aortic balloon counterpulsation.
• Gain clinical experience in the evaluation and management of patients with: cerebrovascular disease.
• Gain clinical experience in the management of: preoperative and postoperative patients; geriatric patients with cardiovascular disease.

**Objectives: First Year Fellows**

• Gain a better understanding of the basic physiology of cardiovascular diseases including but not limited to: chronic coronary heart disease, congestive heart failure, arrhythmias, acute myocardial infarction and other acute ischemic syndromes, lipid disorders, hypertension, cardiomyopathy, valvular heart disease, pulmonary heart disease and pulmonary embolism, peripheral vascular disease, infections and inflammatory heart disease, cardiovascular rehabilitation, adult congenital heart disease, pericardial diseases, and cardiovascular trauma.
• Become ACLS certified if they have not yet been certified.
• Understand basics of routine monitoring: pulse oximetry, oscillometric blood pressure cuffs, telemetry, noninvasive cardiac outputs.
• Placement of Swan-Ganz catheters, obtain and interpret data from catheter, all with direct supervision.
• Learn management of patients presenting with acute coronary syndromes and appropriate use of the catheterization laboratory for intervention when indicated.
• Learn indications and contraindications of elective cardioversion; use of temporary pacemakers, including transvenous and transcutaneous; and pericardiocentesis.
• Familiarize themselves with the presentation and management of acute and chronic heart failure.
• Become familiar with presentation and management of benign and malignant arrhythmias.
• Become familiar with therapeutic hypothermia in the setting of sudden cardiac death.
• Become familiar with indications for cardiac testing as it pertains to their patients including but not limited to: stress testing, echocardiography (TTE and TEE), cardiac catheterization (right and left), and electrocardiograms.
• Learn appropriate triage of patients to floor versus ICU, attain familiarity with ICU admission criteria.
• Learn appropriate triage of Cardiology consultations and management of cardiac problems on non-Cardiac patients.
• Learn how to perform preoperative risk stratification for non cardiac surgery in cardiac patients.
Objectives: Second and Third Year Fellows

- Master the physiology and pathophysiology of cardiovascular diseases including but not limited to: chronic coronary heart disease, congestive heart failure, arrhythmias, acute myocardial infarction and other acute ischemic syndromes, lipid disorders, hypertension, cardiomyopathy, valvular heart disease, pulmonary heart disease and pulmonary embolism, peripheral vascular disease, infections and inflammatory heart disease, cardiovascular rehabilitation, adult congenital heart disease, pericardial diseases, and cardiovascular trauma.
- Independently obtain and interpret hemodynamic data from Swan-Ganz catheter.
- Independently manage complex hemodynamics.
- Co-manage with the attending patients presenting with acute coronary syndromes and appropriately triage to the catheterization laboratory for intervention when indicated.
- Independently interpret data obtained from both invasive and noninvasive cardiac studies.
- Master triage of patients to the CICU or stepdown unit from the ED or noncardiac wards.
- Master preoperative risk stratification of non cardiac patients.
- Perform elective cardioversion, perform proper insertion and then management of temporary pacemakers, including transvenous and transcutaneous with attending oversight in nonemergent situations.
- Independently manage acute and chronic heart failure and benign and malignant arrhythmias.
- Independently lead the team on work rounds and clinical data review (review of catheterization films, echocardiograms, stress tests, radiologic studies).

Medical Knowledge

Goal
Fellows 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. Fellows are expected to:

Competencies

- Enhance their knowledge of the following content areas: cardiovascular anatomy; cardiovascular physiology; cardiovascular metabolism; cardiovascular pharmacology, including drug metabolism, adverse effects, indications, the effects on aging, relative costs of therapy, and the effects of non-cardiovascular drugs upon cardiovascular function; cardiovascular pathology; genetic causes of cardiovascular disease.
- Enhance their knowledge in regards to prevention of cardiovascular disease, including: epidemiology and biostatistics; risk factors; lipid disorders.
- Become familiar with diagnostic techniques, including: magnetic resonance imaging; fast computed tomography; positron emission tomography.
- Gain clinical experience in the interpretation of the following: chest x-rays; electrocardiograms; radionuclide studies of myocardial function and perfusion.

Objectives: First Year Fellows
• Understand the indications, contraindications, complications, and limitations of common critical care procedures such as central line placement, arterial line placement, Swan-Ganz monitoring, and intubation.
• Understand the indications for use of diagnostic techniques, including: magnetic resonance imaging; fast computed tomography; positron emission tomography.
• Become familiar with indications for therapeutic interventions as they pertain to their patients including but not limited to: percutaneous coronary intervention, temporary and permanent pacemaker placement, use of ICDs, and placement of intraaortic balloon pumps.
• Become familiar with the interpretation and management of arrhythmias, critical and non-critical, on telemetry and 12-lead ECG.
• Understand the pharmacology, indications, and uses of common vasopressors, including but not limited to dobutamine, milrinone, dopamine, and phenylephrine.
• Understand the physiology of cardiogenic shock, respiratory failure, and failure of other major organ systems.

Objectives: Second and Third Year Fellows
• Demonstrate advanced understanding of the following content areas: cardiovascular anatomy; cardiovascular physiology; cardiovascular metabolism; cardiovascular pharmacology, including drug metabolism, adverse effects, indications, the effects on aging, relative costs of therapy, and the effects of non-cardiovascular drugs upon cardiovascular function; cardiovascular pathology; genetic causes of cardiovascular disease.
• Properly utilize diagnostic techniques, including: magnetic resonance imaging; fast computed tomography; positron emission tomography.
• Independently place and monitor central venous lines, arterial lines, Swan-Ganz catheters.
• Demonstrate the proper use of common vasopressors in patients with cardiogenic shock.
• Co-manage ventilators with the pulmonary consult service.
• Independently manage intraaortic balloon pumps.

Practice- Based Learning and Improvement
Goal
Fellows 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. Fellows are expected to develop skills and habits to be able to:

Competencies
• Identify strengths, deficiencies and limits in one’s knowledge and expertise.
• Set learning and improvement goals.
• Incorporate formative evaluation feedback into daily practice.
• Locate, appraise and assimilate evidence from scientific studies related to their patients’ health problems.
• Use information technology to optimize learning.
• Participate in the education of patients, families, students, residents and other
health professionals, as documented by evaluations of the fellow’s teaching abilities by faculty and/or learners.

Objectives: First Year Fellows

- Set learning and improvement goals in conjunction with the attending at the beginning of the month.
- Learn about the resources available including textbooks and the internet to implement optimal patient care.
- Share data and knowledge obtained from literature or internet searches with the teams (inpatient and consultation) as teaching points.
- Receive verbal feedback routinely and utilize that feedback to optimize performance.

Objectives: Second and Third Year Fellows

- Set learning and improvement goals at the beginning of the month.
- Independently use available resources to quickly and efficiently obtain critical information vital to optimal patient care.
- Assist housestaff and students in utilizing available resources to obtain information and scientific studies to share with the team.
- Use information obtained to effectively educate students, housestaff, patients, and their families.
- Receive verbal feedback and utilize routinely to optimize performance.
- Give routine verbal feedback to housestaff and student so they may optimize their performance.

Systems Based Practice

Goal

Fellows 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. Fellows are expected to:

Competencies

- Work effectively in various health care delivery settings and systems relevant to cardiovascular medicine.
- Coordinate patient care within the health care system relevant to cardiovascular medicine.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient care.
- Advocate for quality patient care and optimal patient care systems.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.

Objectives: First Year Fellows

- Assist in coordinating care with in-hospital services such as pharmacy, social work, and case management to improve patient care and ensure safety.
- Assist in the communication between the team and consultants to improve the quality of patient care.
- Discuss patient care and coordination of care with consulting teams

Objectives: Second and Third Year Fellows
• Coordinate care with in-hospital services to improve patient care and safety.
• Coordinate clear communication between the team and consultants to enhance patient care and safety.
• Understand and participate in the continuous quality improvement process as it pertains to the cardiology services.
• Assist in coordinating safe and effective transfer of critically ill patients from outside facilities.

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

Competencies
• Compassion, integrity, and respect for others.
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society, and the profession.
• 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: First Year Fellows
• Be readily available to members of the team to review new admissions.
• Learn to apply evidence based medicine to patient care.
• Show respect for patients and peers in daily interactions.
• Be readily available to inpatient services for consultations on a variety of patients throughout the hospital.

Objectives: Second and Third Year Fellows
• Independently staff all new admissions prior to attending rounds.
• Practice sound evidence based medicine.
• Continue to treat patients and peers with the utmost respect.
• Be readily available to inpatient services for consultations on a variety of patients throughout the hospital.

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

Competencies
• Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member of leader of a health care team or other professional
- Maintain comprehensive, timely, and legible medical records.

**Objectives: First Year Fellows**
- Learn to communicate effectively with the faculty and other members of the patient care team.
- Learn to communicate effectively as a consultant.
- Learn to communicate effectively with patients and their family members.
- Learn to deliver bad news in an effective and compassionate fashion.

**Objectives: Second and Third Year Fellows**
- Actively teach medical students and housestaff independent of attending rounds.
- Participate in teaching ECG rounds.
- Continue to hone communication skills as a consultant.
- Communicate effectively with faculty, housestaff, patients, and their families.
- Lead family meetings and teach residents to deliver bad news in a compassionate way.

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**Teaching Methods**

The primary teaching method will be through daily teaching and work rounds. The fellow is expected to round with the attending physician on a daily basis. There will be two different sets of rounds, one for the inpatient Cardiology service, and the other for the consultation service. These rounds will be patient-based sessions in which current cases are presented as a basis for discussion of such points as interpretation of clinical data, pathophysiology, differential diagnosis, specific management of the patient, the appropriate use of technology, the incorporation of evidence and patient values in clinical decision making, and disease prevention.

The fellow is expected to review studies such as catheterization, echocardiograms, stress tests, daily labs, and radiologic studies with the attending to enhance their learning. Daily interaction with interventionalists, echocardiographers, and electrophysiologists as well as consultants will also provide opportunity for further education.

The fellow will be expected to practice sound evidence based medicine and will be given access to resources to be utilized to enhance this practice. Resources include citations of important literature and use of hospital and MCW-based information technology.

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**Assessment Method (Fellows)**

Fellows are given verbal feedback on their performance by the faculty throughout the rotation and in particular at the end of each 2 week block. Final evaluations by each attending will be based on the general ACGME competencies of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, systems-based practice, and professionalism. A formal written evaluation will be entered by the faculty into New Innovations. It will then be reviewed and signed by the fellow.

Fellows will also be evaluated in regards to their teaching skills by the housestaff and
students.
Assessment Method (Program Evaluation)
Fellows will assess the rotation overall as well as their attending physicians. These will be written evaluations which will be shared with the Chair of the Division as well as the Fellowship Program Director. Feedback from the fellows will allow for correction of any perceived deficiencies in learning opportunities on this rotation.

Level of Supervision
One faculty member is assigned to the inpatient cardiology service and consultation service for a 2 week period of time. This faculty will be the attending of record on all inpatient and CICU admissions, and consultations and will have primary supervisory responsibility for the cardiology fellow on service.

Educational Resources
The fellow will be expected to practice sound evidence based medicine and will be given access to resources to be utilized to enhance this practice. Resources include citations of important literature and use of hospital and MCW-based information technology.

Guidelines:


Gibbons et al. 2002 GUIDELINE UPDATE FOR EXERCISE TESTING. Circulation 2002;106:1883-1892
Chronic Stable Angina: ACC/AHA 2002 Guideline Update for Management of Patients with (J Am Coll Cardiol 2003; 41:159-68)


Surgery) (Circulation. 2007;116:e418-e500.)

Textbooks:
Braunwald’s Heart Disease: A Textbook of Cardiovascular Medicine, 7th ed.

Clinical Recognition of Congenital Heart Disease; Perloff, 5th ed.

Diagnosis and Management of Adult Congenital Heart Disease; Gatzoulis, Webb, Daubeney.

Chou’s Electrocardiography in Clinical Practice; Surawicz/Knilans, 5th ed.