

Family Medicine Cardiology Rotation Educational Goals & Objectives

The Cardiology rotation will provide the Family Medicine resident with an understanding of cardiovascular physiology and its broad systemic manifestations. The goal is to familiarize the resident with basic pathophysiology, clinical manifestations, diagnostic strategies and management of cardiovascular disease as well as disease prevalence and prevention. The resident will have the opportunity to evaluate and manage patients across a spectrum of cardiovascular disorders, primarily in the outpatient setting. However, residents may see patients in consultation in the emergency department (ED) and hospital to learn to triage acutely ill, high risk patients and to facilitate transition from the inpatient to the outpatient setting to appropriately follow up patients discharged from the ED. Depth of exposure should be such that they can develop competency in the prevention of cardiovascular disease, indications and contraindications for procedures, initial management of acutely ill patients, chronic management of common cardiovascular conditions, and appropriate indications for referral.

Faculty will facilitate learning in the 6 core competencies as follows:

Patient Care and Procedural Skills

- I. All residents must be able to provide compassionate, culturally-sensitive, and appropriate care for patients to prevent and treat cardiovascular disease.
 - PGY2s should seek directed and appropriate subspecialty or surgical consultation when necessary to further patient care.
 - PGY3s should supervise and ensure seamless transitions of care between primary and consulting teams and between inpatient and outpatient care.

During the course of this rotation, all residents should learn criteria and urgency for specialty referral (emergency department versus office consultation) and appropriate PCP follow up after specialty care.

- II. Residents will demonstrate the ability to take a pertinent cardiovascular history and perform a focused physical exam. PGY1s should be able to differentiate between stable and unstable symptoms and elicit the following historical details:
 - risk factors for the development of cardiovascular disease
 - personal and family history of cardiovascular disease
 - symptoms associated with cardiovascular disease and their duration, including NYHA class
 - complete medication history

PGY2s should be able to recognize atypical chest pain, symptoms pertinent to volume status, and exercise intolerance and intermittent claudication as manifestations of cardiovascular disease.

PGY3s should be able to independently obtain the above details for patients with complex cardiovascular histories and multiple comorbid conditions.

- III. Residents should be able to appreciate the following physical findings:

- PGY1s: assessment of peripheral pulses, asymmetry of blood pressures, jugular venous distention, murmurs, physical reflection of volume status, signs of shock, vascular bruit
- PGY2s/PGY3s: characterization of peripheral pulse findings (e.g. parvus et tardis, etc.), maneuvers to help identify systolic and diastolic murmurs, pericardial rub
- PGY3s should be able to characterize the 3 components of a pericardial rub and to understand the clinical significance of physical findings

IV. Residents will understand the indications, contraindications, complications, limitations, and interpretation of following procedures, and become competent in the their safe and effective use:

- PGY1s: ACLS, arterial line placement, central line placement
- PGY2s: utilization of transthoracic pacer in emergent situations
- PGY3s: stress testing (optional)

In addition, residents will learn to counsel patients and/or families regarding the indications and contraindications for the following procedures:

- PGY1s: cardiac catheterization, pacer placement, thrombolytic treatment
- PGY2s: EPS testing, interventional treatment of stable angina, valve replacement
- PGY3s: cardiac transplantation, AICD; PGY3s will also be able to independently counsel patients on the above issues in the setting of complex socio-medical circumstances.

V. PGY3s will be able to see patients independently in clinic and develop appropriate management plans for a broad range of patients with cardiovascular issues commonly seen in the clinic, such as an asymptomatic 20-year-old patient with a murmur and an elderly diabetic patient with a history of cardiovascular disease and chronic angina.

Medical Knowledge

I. PGY1s will develop an understanding of the basic pathophysiology and approach to the following common cardiovascular conditions:

- Cardiomyopathy
- Congestive heart failure, systolic and diastolic
- Coronary artery disease
- Dysrhythmias
- Endocarditis
- Hypertension
- Peripheral vascular disease
- Valvular heart disease

PGY2s will also develop an understanding of the pathophysiology, clinical presentation, and targeted therapy for the following cardiovascular conditions:

- Myocarditis
- Pericardial disease, including constriction and tamponade
- Pulmonary hypertension

PGY3s will develop an understanding of the pathophysiology, clinical presentation, and targeted therapy for the above cardiovascular conditions, with attention to differences in patient populations where appropriate. They will also become familiar with:

- Adult congenital heart disease
- Cardiac transplantation, with focus on appropriateness for transplant and long term management

II. Residents will become comfortable with timely triage and therapy for *acute* cardiovascular conditions, including:

- Acute aortic dissection
- Acute congestive heart failure
- Acute coronary syndrome
- Cardiac tamponade
- Hypertensive urgency/emergency
- Unstable dysrhythmia
- Shock

III. PGY1s will be able to understand the indications for ordering and the interpretation of the following laboratory values and procedures:

- BNP
- CK
- ECG interpretation
- Echocardiogram
- Stress testing
- Troponin

PGY2s will learn the urgency of performing the above labs and procedures as well as indications for ordering and interpretation of:

- Event/Holter monitor
- Noninvasive pacing
- Specific stress tests – exercise v. chemical, nuclear v. echo
- Tilt table testing

PGY3s will independently, appropriately order studies and be able to interpret results within the context of patient comorbidities, pretest probability of disease, and patient values. PGY3s will also demonstrate knowledge of the indications, contraindications, and appropriate timing for the following procedures:

- AICD and pacemaker placement
- Cardioversion
- Diagnostic cardiac catheterization and angioplasty/stent placement
- Coronary artery bypass grafting
- Electrophysiology testing
- Pericardiocentesis

- Thrombolytics
- IV. Residents should become fluent in the issues of health maintenance relevant to cardiovascular disease and be able to counsel patients appropriately on:
 - Diet
 - Cholesterol screening
 - Blood pressure screening
 - Smoking cessation
 - Exercise prescription
 - Stress reduction

Practice-Based Learning and Improvement

- I. All residents should be able to access current cardiac clinical trial data and national guidelines (e.g. American Heart Association www.heart.org) to apply evidence-based strategies to patient care.
- II. PGY2s should develop progressive independence in evaluating new studies in published literature, through Journal Club and independent study.
- III. All residents should participate in case-based therapeutic decision-making, involving the primary care provider, cardiologist and cardiothoracic surgeon. Residents should learn to coordinate patient care as part of a larger team, including the nurse, pharmacist, dietician, and social worker to optimize patient care, and PGY3s should take a leadership role.
- IV. All residents should respond with positive changes to feedback from members of the health care team.

Interpersonal and Communication Skills

- I. PGY1s must demonstrate organized and articulate electronic and verbal communication skills that build rapport with patients and families, convey information to other health care professionals, and provide timely documentation in the chart.
- II. PGY2s must also develop interpersonal skills that facilitate collaboration with patients, their families, and other health professionals.
- III. PGY3s should demonstrate leadership skills to build consensus and coordinate a multidisciplinary approach to patient care.
- IV. PGY3s must be able to elicit information or agreement in situations with complex social dynamics, for example, identifying the power of attorney or surrogate decision maker, and resolving conflict among family members with disparate wishes.

Professionalism

- I. All residents must demonstrate strong commitment to carrying out professional responsibilities as reflected in their conduct, ethical behavior, attire, interactions with colleagues and community, and devotion to patient care.
- II. PGY1s should be able to educate patients and their families in a manner respectful of gender, age, culture, race, religion, disabilities, national origin, socioeconomic status, and sexual orientation on choices regarding their care.

- III. PGY2s should be able to use time efficiently in the clinic to see patients and chart information.
- IV. PGY2s should be able to counsel patients and families both on diagnostic and treatment decisions and on withdrawal of care.
- V. PGY3s should be able to provide constructive criticism and feedback to more junior members of the team.

Systems-Based Practice

- I. PGY1s must have a basic understanding that their diagnostic and treatment decisions involve cost and risk and affect quality of care.
- II. PGY2s must be able to discuss alternative care strategies and the cost and risks involved in current quality issues in cardiovascular care, such as appropriateness of interventional treatment.
- III. PGY3s must demonstrate an awareness of and responsiveness to established quality measures, risk management strategies, and cost of care within our outpatient health care system.

Teaching Methods

- I. Supervised patient care in the outpatient and inpatient setting.
 - Residents will initially be directly observed with patients, to facilitate the acquisition of excellent history taking and physical exam skills.
 - As residents become more proficient, they will interact independently with patients and present cases to faculty.
 - Initial emphasis will be on diagnosis and basic management.
 - Residents will read and interpret ECGs and reports of echocardiograms, stress tests, and catheterizations under the supervision of attending physicians.
 - When residents have mastered these skills, focus will shift to how the provider uses test results and clinical information to aid in medical decision-making, and residents will work with supervising physicians to finalize a care plan.
- II. Conferences
 - Specialty-specific didactics
- III. Independent study
 - NEJM Question Bank – residents will be expected to complete the cardiology questions during the rotation.
 - Journal and Textbook reading TBD by cardiology team
 - Online educational resources
 - American College of Cardiology <https://www.acc.org/guidelines> guidelines and clinical documents
 - Clinical Key
 - ECG tutorial https://en.ecgpedia.org/index.php?title=Main_Page

- ECG Wave Maven <https://ecg.bidmc.harvard.edu/maven/mavenmain.asp>
- Heart sounds <https://depts.washington.edu/physdx/heart/demo.html>
- Reconsidering the use of race correction in clinical algorithms: <https://www.nejm.org/doi/full/10.1056/NEJMms2004740>
- Up to Date

Evaluation

- I. Mini-CEX bedside evaluation tool
- II. ECG reading
- III. Verbal mid-rotation individual feedback
- IV. 360 Evaluation
- V. Attending written evaluation of resident at the end of the month based on rotation observations and chart review.

Rotation Structure

- I. Residents should contact the lead cardiologist the day prior to determine start time and location. Residents should notify the attending physician promptly if they cannot be available at their assigned time.
- II. Residents will spend the majority of their time in clinic, including dedicated days in Centers for Family Health clinics. Experiences will include regular ECG reading and stress testing to achieve the above educational goals.
 - Residents will present patients to the attending and actively participate in generation of a differential diagnosis and development of a diagnostic and/or treatment plan, including risk stratification.
 - When possible, residents should see patients in whose care they have participated when those patients return for follow up.
 - Case-based learning is most effective. Nightly reading/study should be based on patients seen during the day.
 - When doing consults, the resident should understand the question asked and provide a concise answer.
 - Residents may be asked to do focused literature searches or presentations during the course of the rotation.
- III. Call and weekend responsibilities TBD by the attending physician. However, residents should expect to round on inpatients, see patients in the emergency department in consultation, and do a minimum of 2 weekend shifts in the hospital.
 - Hours worked must be consistent with ACGME requirements and are subject to approval by the Program Director.
- IV. Residents have specialty-specific didactics and should be excused in a timely fashion to attend