CARDIOLOGY CONSULT CURRICULUM

Target: PGY 1-3
Updated June 2020

A. EDUCATIONAL OVERVIEW

Residents on the cardiology service are expected to gain exposure to cardiac conditions frequently encountered in a general internal medicine practice and progressively develop a level of competence in order to diagnose and treat these conditions independently. For less common or more complex cases, residents will be able to provide consultation with the supervision of a specialist and learn when/how to appropriately refer the patient for subspecialty care.

B. ROTATION DESCRIPTION AND STRUCTURE

Training on the cardiology consult service takes place at the Olive View-UCLA Medical Center, and spans the three years of training. It is composed of clinical experiences on the inpatient consult service and outpatient clinic. Rotations on the inpatient consult service are two weeks in length. Outpatient cardiology clinic is assigned during Ambulatory Medicine week and during the inpatient consult rotation. Trainees care for patients with acute and chronic cardiovascular diseases. Supervision is be provided by the Cardiology faculty and assisted by the Cardiology fellow(s).

C. GOALS & OBJECTIVES

Residents are expected to achieve the common goals and objectives of clinical care (see separate document) in addition to the following goals and objectives by the completion of training.

1. **Goal: Provide the initial evaluation and management of common cardiovascular signs and symptoms: chest pain including angina, dyspnea, dizziness, syncope, palpitations, murmur.**

   - Perform a comprehensive history and exam to ascertain, categorize, and/or assess the severity of a patient's reported symptoms (e.g. typical angina, atypical angina, and non-cardiac chest pain). (PC1, MK1)

   - Identify and differentiate heart murmurs and correlate to the underlying condition (PGY 1). (PC1)

   - Identify and calculate a patient's risk for ischemic heart disease. (PC1, MK1)

   - Identify exam findings suggestive of peripheral vascular disease, carotid artery disease, and cardiac hypertrophy. (PC1)

   - Select the appropriate diagnostic studies for evaluation for these symptoms based upon a differential diagnosis. (PC2)

2. **Goal: Rapidly diagnose and treat cardiovascular emergencies.**
   - Identify these cardiovascular emergencies based on signs, symptoms, exam findings, and lab or diagnostic data: (PC1, MK1):
     - Acute coronary syndrome
     - Aortic dissection

- o Cardiac tamponade

- o Cardiogenic shock/severe acute decompensated heart failure

- o Unstable arrhythmia such as ventricular tachycardia

- o Complications of cardiac procedures

- Appropriately monitor and select treatments (including level of care) to manage these cardiovascular emergencies. (PC2/3)

- Appropriately consult subspecialty services to assist in management of these emergencies and their complications (PGY 1). Be aware of DOM must call list. (PC3/5)

3. **Goal: Appropriately use diagnostic cardiology studies for diagnosis and management.**

- Explain the indications, limitations, and appropriate use of the following studies: (MK2)

  - o Exercise stress test

  - o Echocardiography

  - o Chest x-ray

  - o Electrocardiogram (EKG)

  - o Telemetry/ambulatory ECG monitoring

- Use the EKG to interpret the following conditions: (PC1, MK2)

  - o Myocardial infarction and ischemia

  - o Chamber enlargement

  - o Intraventricular conduction disturbances

  - o Pre-excitation and bypass tracts

  - o Drugs, electrolyte abnormalities, and miscellaneous EKG changes in systemic disease

  - o Supraventricular arrhythmias

  - o Ventricular arrhythmias

- Select diagnostic cardiac tests with an approach that is cost-effective and utilizes resources wisely at Olive View. (PC2, SBP3)

4. **Goal: Evaluate and manage acute and chronic presentations of <u>Coronary Artery Disease</u>.**

- Explain the spectrum of Acute Coronary Syndrome (ACS), including unstable angina, Non-ST elevation myocardial infarction (NSTEMI), and ST elevation myocardial infarction (STEMI). (MK1)

- Compare and appropriately implement the initial medical therapy options based on the type of ACS presentation. (PC2, MK1)

- Describe the different interventional options for management of ACS, including PCI and coronary bypass surgery. (MK2)

- Monitor for and manage complications of myocardial infarction: heart failure, atrioventricular nodal block. (PC1/2, MK1)

- Explain the indication and use of different thrombolytic and antiplatelet agents. (MK1)

- Manage pharmacotherapy for chronic ischemic heart disease treated with and without a stent while ensuring the patient understands of the importance of medications. (PC2/3, ICS1)

5. **Goal: Evaluate and manage <u>Acute Decompensated Heart Failure</u>.**

- Explain the pathophysiology of congestive heart failure, including etiologies and hemodynamic changes. (MK1)

- Assess for the etiology of acute heart failure by history, exam and additional diagnostic tests. (PC1)

- Perform a comprehensive exam with particular attention to assessment of volume status and right versus left ventricular failure in patients with decompensated heart failure. (PC1)

- Identify patients in cardiogenic shock and evaluate the need for hemodynamic support and ICU/CCU care. (PC1/3/5)

- Initiate treatment for acute heart failure, including appropriate oral and intravenous medications. (PC2)

- Compare management variations in treating acute decompensated heart failure with reduced versus preserved ejection fraction, with particular attention to evidence-based benefits of medications. (PC2, MK1)

- Coordinate discharge care through a multidisciplinary approach with appropriate patient education and medication reconciliation to reduce hospital readmission. (SBP1/3, ICS1/2)

6. **Goal: Evaluate and manage patients in the outpatient setting with chronic <u>Heart Failure with Reduced Ejection Fraction</u> (HFrEF) and <u>Heart Failure with Preserved Ejection Fraction</u> (HFpEF).**

- Distinguish patients with HFrEF versus HFpEF. (PC1, MK1)

- Order appropriate work-up for etiologies of heart failure, including laboratory studies, echocardiogram, and tailored ischemic evaluation. (PC2)

- Explain non-procedural, non-medication-based treatment for patients with heart failure, including salt and fluid restriction. (PC2, MK1)

- Initiate and manage medical treatment of heart failure that meets national guidelines for goal-directed medical therapy. (PC2/3, MK1)

- Assess the efficacy of chronic management using the patient's reported symptoms, compliance with recommended treatment, and a comprehensive cardiac exam with particular attention to volume status. (PC1-3)

- Identify and refer high-risk patients that may benefit from an ICD for primary or secondary prevention of sudden cardiac death. (PC5, MK1)

- Identify and refer high-risk patients that may need advanced cardiac care for heart failure, including heart transplantation. (PC5, MK1)

7. **Goal: Diagnose and manage the different forms of <u>cardiomyopathy</u>: dilated, restrictive, cardiac tumors, and myocarditis.**

- Detect and explain the murmur of hypertrophic cardiomyopathy. (PC1, MK1)

- Identify and treat complications of cardiomyopathy. (PC1, MK1)

- Manage patients with asymptomatic left ventricular dysfunction. (PC2/3)

- Select and refer patients who could benefit from an implantable cardioverter-defibrillator (ICD). (PC5)

8. **Goal: Diagnose and manage acute and chronic <u>Atrial Fibrillation</u>.**

- Explain the mechanism of and risk factors for atrial fibrillation. (MK1)

- Explain the difference between valvular and non-valvular atrial fibrillation. (MK1)

- Assess the risk of stroke in patients with atrial fibrillation. (PC1)

- Select appropriate medical management of atrial fibrillation targeting the arrhythmia and patient's stroke risk. (PC2)

9. **Goal: Diagnose and manage other common <u>Arrhythmias</u>: Atrial Flutter, Sinus Arrhythmias, Heart Block, Ventricular Arrhythmias.**

- Interpret EKG and rhythm strips accurately to diagnose arrhythmias, differentiating between conditions of the sinus node, atrioventricular node, and myocardium to diagnose the following: sinus tachycardia, sinus bradycardia, atrioventricular heart block, supraventricular tachycardia, ventricular tachycardia, and ventricular fibrillation. (PC1, MK2)

- Compare and contrast treatment options for atrial fibrillation and flutter. (MK1)

- Manage isolated symptomatic premature ventricular contractions (PVC). (PC2)

- Differentiate atrioventricular heart blocks: 1st degree, 2nd degree (Mobitz Type 1 and Type 2), and Complete Heart Block. (MK1)

- Identify the causes of and manage supraventricular tachycardia. (PC2, MK1)

- Rapidly identify and manage ventricular tachycardia and ventricular fibrillation. (PC1)

- Refer appropriate patients with arrhythmias to cardiology or electrophysiology. (PC5)

10. **Goal: Diagnose and treat common <u>Pericardial Diseases</u>.**

- List the etiologies of pericardial disease. (MK1)

- Explain the pathophysiology and findings of cardiac tamponade and pericardial constriction. (MK1)

- Recognize pericardial diseases based on characteristics of symptoms, focused cardiac exam, and selective diagnostic tests. (PC1)

- Initiate treatment for pericardial disease. (PC2/3)

- Describe the indications for urgent pericardiocentesis and refer patients appropriately. (MK2, PC5)

11. **Goal: Diagnose and treat common <u>Pulmonary Heart Diseases</u>.**

   - Identify patients at risk for or diagnose patients with primary pulmonary hypertension. (PC1)

   - Diagnose cor pulmonale and Eisenmenger Syndrome. (PC1)

   - Diagnose and initiate treatment for pulmonary embolism. (PC1/2)

   - Refer patients with high-risk pulmonary embolism who may benefit from more invasive, interventional-based care (e.g. thrombolytics, catheter directed therapy, embolectomy). (PC3/5)

12. **Goal: Diagnose and understand common <u>Congenital Heart Diseases</u>.**

   - Describe the definition and classification of congenital heart diseases. (MK1)

   - Diagnose and explain the complications of atrial septal defect. (PC1, MK1)

   - Describe other specific defects: bicuspid aortic valve, ventricular septal defect, patent ductus arteriosus. (MK1)

   - Appropriately refer patients with congenital heart diseases for specialized management. (PC5)

13. **Goal: Diagnose and understand common <u>Cardiac Tumors</u>.**

   - Describe the most common cardiac masses, particularly myxomas. (MK1)

   - Recommend the initial diagnostic evaluation of suspected cardiac tumors. (PC2)

14. **Goal: Understand the relationship between <u>Pregnancy and Heart Disease</u>.**

   - Explain the expected hemodynamics of normal pregnancy. (MK1)

   - Describe common cardiac conditions associated with pregnancy or post-partum period, including coronary dissection and cardiomyopathy. (MK1)

15. **Goal: Provide coordinated general management of cardiac patients with particular attention to other non-cardiac conditions and/or non-cardiac surgery/procedures.**

   - Assess and manage bleeding risk before colonoscopy in a patient taking antiplatelet therapy. (PC1-3)

   - Manage coronary artery disease in a patient with diabetes mellitus. (PC2/3)

   - Select appropriate cardiac testing (including stress testing) in patients with cardiac pacemakers and/or ICDs. (PC2/3)

   - Describe dose variations and contraindications of common cardiac medications in patients with renal or liver disease or in the setting of pregnancy or lactation. (PC2/3/5)

D. CORE TOPICS IN CARDIOLOGY

   - Ischemic Heart Disease
     - o Acute coronary syndrome
     - o Atherosclerotic coronary artery disease

   - Cardiomyopathy

- o Heart failure with reduced ejection fraction (HFrEF)
- o Heart failure with preserved ejection fraction (HFpEF)
- o Hypertrophic cardiomyopathy
- o Dilated cardiomyopathies
- o Restrictive cardiomyopathies
- Valvular Heart Disease
  - o Mitral stenosis
  - o Mitral regurgitation
  - o Mitral valve prolapse
  - o Aortic stenosis
  - o Aortic regurgitation
  - o Tricuspid disease (TS/TR)
  - o Pulmonic disease (PS/PI)
  - o Infective endocarditis
  - o Prosthetic valves
- Arrhythmias
  - o Ventricular arrhythmias
    - Ventricular tachycardia
    - Ventricular fibrillation
  - o Supraventricular arrhythmias
    - Atrial fibrillation
    - Atrial flutter
    - Atrioventricular Reentrant Tachycardia (AVRT)
    - Atrioventricular Nodal Reentrant Tachycardia (AVNRT)
    - Atrial tachycardia
    - Multifocal atrial tachycardia
  - o AV node dysfunction
  - o Sinus node dysfunction
    - Sick sinus syndrome (SSS)
- Pericardial Disease
  - o Pericarditis
  - o Pericardial effusion and tamponade
- Pulmonary Heart Disease
  - o Pulmonary embolism

- o Primary pulmonary hypertension
- o Cor pulmonale
- Cardiac tumors
- Congenital Heart Disease
- Pregnancy and Heart Disease
- Aortic and Peripheral Vascular Disease
- Pre-surgical evaluation for non-cardiac surgery

E. TEACHING METHODS

Clinical education is provided through direct patient care and attending rounds with the supervising attending physician as well as fellow. Bedside teaching will be employed to demonstrate physician exam techniques.

Housestaff are required to attend the daily Noon Conference series and Morning Report when permitted by patient care duties.

Housestaff expected to supplement their learning with additional reading on disease encountered.

F. SUPERVISION AND EVALUATION

All housestaff and patient care will be supervised by the attending physicians. Residents will be evaluated by the supervising attendings. Direct verbal feedback may be provided throughout the rotation, and written evaluation will be submitted electronically in MedHub at the end of the rotation. These can be reviewed by the resident at any time and will be reviewed with the housestaff during the Clinical Competency Committee meeting.

Direct observation and feedback of interviewing, examination, and/or counseling skills may be documented with the Mini-CEX.

G. EDUCATIONAL RESOURCES

Electronic resources are also available through the internet at Olive View-UCLA Medical Center and through UCLA.

- UpToDate
- Dynamed (coming)
- Harrison's Principles of Internal Medicine
- PubMed

Other suggested reading and resources:

- Braunwald's Textbook of Cardiovascular Diseases
- American College of Cardiology guidelines
- The Heart Textbook of Cardiology
- Mayo Clinic Cardiology Review
- Constant J, Bedside cardiology. Boston, MA: Little Brown
- Marriot. Practical electrocardiography. Baltimore, MD: Williams and Wilkins
- Cheitllin, MD. The chest x-ray and the diagnosis of heart disease. In Parmley, WW and Chatterjee, K, eds. Cardiology, Philadelphia, PA: Lippincott
- Criley heart sounds. CD-ROM available in cardiology suite