

## **Cardiology/CCU Curriculum**

### **Goal**

Cardiology is the prevention, diagnosis and management of disorders of the cardiovascular system, including ischemic heart disease, dysrhythmias, cardiomyopathies, valvular disease, pericarditis, myocarditis, endocarditis, congenital heart disease in adults, hypertension, and disorders of the veins, arteries, and pulmonary circulation. Management of risk factors for disease and early diagnosis and intervention for established disease are important elements of cardiology.

Rotation on the medical ward services, general medical clinic, cardiology clinic and on cardiology/CCU rotation will provide training for the resident to (1) understand risk factors for the development and/or exacerbation of cardiovascular disease to effectively provide primary and secondary preventative care, (2) diagnose and treat a broad spectrum of cardiovascular and related complaints commonly encountered in a general internal medicine practice, (3) develop competence in perioperative patient care and care of patients status post catheter-based interventions (e.g. PTCA, stent, ablation), (4) manage the initial approach to acutely ill patients with hypotension, (5) develop critical thinking and a sense of autonomy in the care of severely ill patients, and (6) recognize the need for and appropriate timing of cardiology referral.

The internist will usually be assisted by the cardiologist for diagnostic procedures and complicated conditions such as cardiogenic shock. If such expertise is not available, the internist, with additional training, may have to assume these roles.

### **Objectives**

#### **Patient Care**

- I. Provide patient care that is compassionate, appropriate and effective for the prevention and treatment of cardiovascular disorders.

#### **Medical Knowledge**

- I. Develop the knowledge and skills to obtain an appropriate history on patients at risk for or with cardiovascular disease including identification of risk factors, symptoms, co-morbidities and medication use.
- II. Develop the knowledge and skills for performing and interpreting physical exam findings on patients with cardiovascular disease including:
  - a. vital signs
  - b. assessment of jugular venous distention
  - c. examination of peripheral pulses
  - d. inspection, palpation, and auscultation of precordium in supine and left lateral decubitus positions
- III. Develop an approach to patients presenting with the following symptoms or signs:
  - a. asymptomatic patients with risk factors for cardiovascular disease

- b. chest pain
  - c. cough
  - d. dyspnea
  - e. exercise intolerance or fatigue
  - f. heart murmur
  - g. hypertension
  - h. intermittent claudication
  - i. leg swelling
  - j. orthopnea and paroxysmal nocturnal dyspnea
  - k. palpitations
  - l. syncope or pre-syncope
- IV. Recognize symptoms and signs, differential diagnosis and management of the following disease processes:
- a. Acute coronary syndrome
  - b. Adult congenital heart disease
  - c. Aortic dissection
  - d. Cardiomyopathies
  - e. Congestive heart failure
  - f. Coronary artery disease
  - g. Dyslipidemias
  - f. Dysrhythmias
  - g. Endocarditis
  - h. Hypertension
  - i. Myocarditis
  - j. Nicotine addiction
  - k. Pericardial tamponade
  - l. Pericarditis
  - m. Peripheral vascular occlusive disease
  - n. Pulmonary edema
  - o. Pulmonary hypertension
  - p. Shock
  - q. Valvular heart disease (prophylaxis of and treatment for)
- V. Understand the impact of chronic systemic disease, including diabetes, hypertension, chronic obstructive pulmonary disease and chronic renal failure on ischemic heart disease and heart failure diagnosis and management.
- VI. Understand the impact of race and sex on cardiovascular risk and response to therapy.
- VII. Understand issues relating to anticoagulation in the cardiac patient including risks, dosage titration, and perioperative management.
- VIII. Understand issues related to the initial assessment of patients with a history of cardiac transplant.

- IX. Understand pharmacologic and invasive therapeutic options for the major diseases listed in IV, including appropriate use of the following therapies:
  - a. ACE inhibitors and angiotensin receptor blockers
  - b. antiarrhythmic agents
  - c. antiplatelet, anticoagulant and antithrombotic therapy
  - d. beta-blockers
  - e. calcium channel blockers
  - f. electrophysiologic therapies (e.g. ablation, implantable defibrillators)
  - g. lipid therapy
  - h. nitrates
  - i. positive inotropes
  - j. pressors
  - k. other vasodilators
  - l. catheter-based intervention
  - m. pacemaker placement
  - n. surgical intervention
  
- X. Understand appropriate use and interpretation of diagnostic studies, including:
  - a. Cardiac enzymes
  - b. Chest radiograph
  - c. Diagnostic and therapeutic cardiac catheterization
  - d. Echocardiogram
  - e. Electrophysiologic testing
  - f. Event/Holter monitoring
  - g. Nuclear stress testing
  - h. Pericardiocentesis
  - i. Right heart catheterization and hemodynamic monitoring
  - j. Treadmill exercise testing
  
- XI. Develop competence in the following procedures:
  - a. Advanced cardiac life support
  - b. Placement of arterial line
  - c. Placement of central line
  - d. Insertion of balloon-tipped pulmonary artery catheter
  - e. Interpretation of electrocardiogram
  - f. Interpretation of stress electrocardiography (optional)

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

- I. Perform independent research for evidence-based practice to answer specific clinical questions arising from patient care.
- II. Review current literature including cardiac clinical trial data for changes in standard of care applicable to general practice.
- III. Review patient care errors with attention to changes in systems to prevent recurrence.
- IV. Utilize information technology to enhance patient education.

## **Interpersonal and Communication Skills**

- I. Communicate effectively with patients and families in a compassionate, culturally sensitive and patient-centered manner to improve understanding and compliance.
- II. Counsel patients effectively on tobacco cessation and lifestyle modification measures as part of primary or secondary prevention measures.
- III. Ensure charting is legible, thoughtful, complete and timely to facilitate communication within the health care team.
- IV. When acting as a consultant, ensure effective communication to the primary team.
- V. Work effectively with surgeons and anesthesiologists where appropriate to develop comprehensive plan of care.

## **Professionalism**

- I. Understand impact of gender, age, culture, religion, and socioeconomic status on choices regarding treatment options.
- II. Accurately describe the risks and benefits of cardiopulmonary resuscitation to patients to obtain code status.
- III. Understand how to inform patients regarding the natural history of their disease and therapeutic interventions and to obtain consent to implement a treatment plan.
- IV. Demonstrate commitment to continuous professional development.
- V. Provide meaningful feedback to colleagues and students regarding performance and behavior.

## **Systems-Based Practice**

- I. Interact with the multidisciplinary team including cardiologist, cardiac rehab, physical therapist, social worker, nurse, pharmacist, dietician, and billing coordinator to provide optimal care.
- II. Apply evidence-based, cost-conscious strategies to prevention, diagnosis and disease management.
- III. Use CCU and telemetry resources appropriately based on patient's condition.
- IV. Develop skills in identifying opportunities for quality improvement, risk management and cost-effectiveness within a practice.

## **Teaching Methods**

- I. Attending supervision of resident activities in patient care
- II. Teaching rounds
- III. Case-based review of diagnostic test material , including treadmill tests, noninvasive imaging data and invasive diagnostic and interventional material with attending cardiologist.
- IV. Conferences
  - Morning report

- Noon conference
- EKG conference
- Cardiology noon conference (For residents on Cardiology/CCU) \*2<sup>nd</sup> Wednesday each month

V. Recommended reading

**Resident Evaluation**

- I. Attending feedback to residents on strengths and weaknesses throughout the rotation
- II. Attending written evaluation of residents at the end of the rotation
- III. Mini-CEX bedside evaluation tool

**Resources**

*Harrison's Principles of Internal Medicine*, 15<sup>th</sup> ed. McGraw Hill, 2001.

*Cecil Textbook of Medicine*, 21<sup>st</sup> ed, Saunders, 2000.

*Scientific American*

*MKSAP*

*Marriott's Practical Electrocardiography*

On-line Resources

UpToDate

MD Consult

Practice Guidelines

American College of Cardiology - [www.acc.org](http://www.acc.org)

Hypertension - [www.nhlbi.nih.gov/guidelines/hypertension/jncintro.htm](http://www.nhlbi.nih.gov/guidelines/hypertension/jncintro.htm).

Cholesterol - [www.nhlbi.nih.gov/guidelines](http://www.nhlbi.nih.gov/guidelines).

American Heart Association - [www.americanheart.org](http://www.americanheart.org)

Residents should review Annals of Internal Medicine for recent Updates in Cardiology section as well as ACP journal club for pertinent articles.