



OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Congestive Heart Failure

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. Types of processes and most common disease entities that cause CHF
2. The basic role of genetics in certain forms of cardiomyopathy
3. Types of processes that cause systolic vs. diastolic dysfunction
4. Symptoms and signs of left-sided vs. right-sided heart failure.
5. Factors leading to symptomatic exacerbation of CHF, including ischemia, arrhythmias, hypoxemia, anemia, fever, hypertension, thyroid disorders, non-compliance with medications and dietary restrictions and use of nonsteroidal anti-inflammatory drugs and other drugs which can lead to fluid retention such as rosiglitazone (Avandia™).
6. Importance of age, gender and ethnicity on the prevalence and prognosis of CHF
7. Physiological basis and scientific evidence supporting each type of treatment, intervention, or procedure commonly used in the management of patients who present with CHF
8. The general approach to the evaluation and treatment of atrial fibrillation

B. SKILLS: Students should be able to demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history, including:
 - Differentiating between various etiologies of heart failure
 - Identifying clinical factors responsible for symptomatic exacerbation
 - Exercise intolerance (fatigue, dyspnea on exertion)
 - Fluid retention
 - dependant edema (peripheral and sacral)
 - dyspnea
 - Changes in sleep pattern (orthopnea, paroxysmal nocturnal dyspnea [PND], nocturia)
 - Assessing the functional capacity of patients with CHF (walking distance, New York Heart classification) and establish functional class
 - Cardiac risk factors

2. Physical exam skills: Students should be able to perform a focused physical exam to help establish the diagnosis of CHF and estimate its severity:
 - Measurement of vital signs including weight and respiratory rate/pattern
 - Accurate measurement of arterial blood pressure and recognition of the typical blood pressure findings that occur in patients with aortic stenosis, aortic insufficiency and pulsus paradoxus
 - Assessment of major arterial pulses for abnormalities, including bruits
 - Assessment of the neck veins for jugular venous distention
 - Assessment of the conjunctiva and optic fundus
 - Assessment of the extremities to ascertain for skin conditions, including color, temperature and the presence of edema, cyanosis or clubbing
 - Assessment of the lungs for crackles, wheezes and decreased breath sounds
 - Inspection and palpation of the anterior chest to identify right and left sided heaves, lifts and thrills
 - Auscultation of the heart to determine rhythm, intensity of heart sounds, splitting of S2 and the presence of rubs, gallops (S3, S4, summation) or extra heart sounds (e.g. clicks)
 - Auscultation of the heart to detect the presence of heart murmurs; when a murmur is present, students should be able to:
 - Identify timing (systolic vs. diastolic, holosystolic vs. ejection)
 - Describe pitch, location and pattern of radiation
 - Gauge significance (innocent vs. pathologic, sclerosis vs. stenosis)
 - Assessment of the abdomen to determine the presence of hepatomegaly, ascites, abnormal pulsations and bruits

3. Differential diagnosis: Students should be able to generate a differential diagnosis and recognize specific history, physical exam and/or laboratory findings that:
 - Help support or refute a clinical diagnosis of heart failure
 - Distinguish between various underlying etiologies of CHF, including disease processes that primarily affect:
 - Pericardium (constrictive pericarditis, pericardial tamponade)
 - Endocardium (valvular [congenital, acquired], endocarditis)
 - Myocardium (hypertrophic, restrictive, congestive)
4. Laboratory interpretation: Students should be able interpret specific diagnostic tests and procedures that are commonly ordered to evaluate patients who present with heart failure. Test interpretation should take into account: Laboratory and diagnostic tests should include, when appropriate:
 - 12-lead ECG
 - Chest radiograph
 - B-type natriuretic peptide

Students should be able to define the indications for the following diagnostic tests and procedures:

- Echocardiography
 - Treadmill and nuclear exercise testing
 - Radionuclide ventriculogram
 - Coronary angiography
5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
 - Recognize the importance of early detection and treatment of risk factors that may lead to the development of heart failure.
 - Identifying the indications, contraindications, mechanisms of action, adverse reactions, and significant interactions of the following treatments/interventions:
 - Non-pharmacological management: Sodium restriction, Physical activity and limitations
 - Pharmacological management (recommended for routine use)
 - Diuretics
 - ACE-I/ARB
 - Beta-blockers
 - Aldosterone antagonists (spironolactone, eplerenone).
 - Digoxin
 - Interventions considered for use in selected patients: Hydralazine and isosorbide dinitrate, Angiotensin receptor blockers, Calcium channel blockers, Anti-arrhythmic agents, Anticoagulants/anti thrombotic agents

- Other modalities: Coronary revascularization, Cardiac re-synchronizing therapy (synchronized biventricular pacing), Implantable cardiac defibrillators
- Developing a timely and appropriate evaluation and treatment plan for patients with heart failure due to diastolic dysfunction, including:
 - Control of physiologic factors (blood pressure, heart rate)
 - Reduction in central blood volume by judicious use of diuretics
 - Alleviation of myocardial ischemia
 - Use of calcium channel blockers