Cardiology Consult Rotation Cardiology Fellow Curriculum Penn State Milton S. Hershey Medical Center

OVERVIEW

The cardiovascular fellow on the consult service will be responsible for the performance and followup of all consultations on patients assigned to the consult attending. Specific responsibilities include:

- Timely response to consultation request.
- Documentation of the indication for the consultation.
- Completion of a comprehensive history and examination.
- Review and documentation of an independent interpretation of all relevant diagnostic information including ECG's, images including chest x-rays, CT scans, echo-Doppler data, nuclear images, MRI scans, catheterization lab images and/or hemodynamic data. Relevant biochemical lab data will also be reviewed and documented.
- Documentation of all cardiovascular diagnoses.
- Documentation of clinical impressions with particular attention to addressing the questions asked by the requesting physician. Recommendations for testing and treatment will be consistent with the ACC/AHA guidelines. Indications for withholding standard treatment must be defined.
- Define a plan for inpatient and outpatient follow up.
- Communication of diagnosis, recommendations and follow-up plan to the requesting physician and patient.
- Assist with the implementation of treatment including computer order entry and communication with the bedside nurse.
- Cardiac fellows will be responsible for in hospital follow-up of all patients on the
 consult service. Documentation of patient response to treatment, change in clinical
 status or plan of care is required.
- Function as junior attending, delegate patient care and supervise medical residents, mid-levels and students caring for patients on the teaching consult service.

EDUCATIONAL GOALS

Cardiovascular fellows will acquire the necessary skills to diagnose and manage patients with coronary artery disease, valvular heart disease, diseases of the myocardium, diseases of the pericardium and congenital heart disease. In addition, the cardiac fellow will be required to

understand, recognize and manage patients with cardiac arrhythmias, conduction disorders and patients presenting with syncope. Fellows will develop bedside cardiology skills with emphasis on cardiac history taking, bedside physical examination including evaluation of normal and abnormal heart sounds, evaluation of heart murmurs, including provocative maneuvers that accentuate or decrease intensity of murmurs, allowing the cardiac fellows to better delineate the origin of the murmur. The fellow will acquire the necessary skills to recognize the peripheral manifestations of cardiac dysfunctions. The cardiac fellow will learn the indications and contraindications for performing diagnostic studies. Adherence to published "appropriateness criteria" for diagnostic tests is expected. Fellows will learn how to obtain informed consent from the patient prior to each procedure. In addition, the cardiac fellow will become proficient in analyzing diagnostic data to establish a cardiovascular diagnosis and treatment plan. The fellow will acquire experience in the clinical analysis of surface and intracardiac ECG recordings, chest radiographs, stress echo and nuclear images, CT scans, M-mode and 2-D echocardiograms, Doppler and catheter hemodynamics, coronary angiography, and contrast ventriculography. Opportunities to review new imaging modalities including cardiac MRI and 3-D echo will be encouraged.

TRAINING OBJECTIVES

- To develop the knowledge and skills required to obtain a proper cardiac history. Specific areas include characterization of chest pain (including the differential diagnosis of various etiologies of chest pain syndrome based on historical description), dyspnea (with differentiating cardiac from pulmonary causes of dyspnea), exercise capacity and functional class. In addition, special emphasis should be paid to medications, medication compliance, dietary habits, smoking and alcohol consumption as well as other risk factors for cardiac diseases. (Patient Care, Medical Knowledge, Practice-Based Learning, Interpersonal and Communication Skills)
- To become proficient in bedside cardiac physical examination. The complete bedside examination includes palpation of all pulses, recognition of pulse characteristics, and blood pressure examinations in both upper and lower extremities, especially when delayed or absent femoral pulses are obtained. The cardiac fellow should also be able to estimate jugular venous pressure as well as characterize different waves in the neck, detect bruits, examine lung fields, and define the precise location and characterization of left and right ventricular impulses. Proficiency is required for auscultation of heart sounds as it relates to intensity, splitting and additional heart sounds such as murmurs, rubs and clicks. To accurately assess the characterization of murmurs with regard to timing pitch, grade, maximal intensity and radiation and the effect of provocative maneuvers in eliciting the origin of the murmur. To recognize the peripheral manifestations of heart dysfunction such as palpable and/or pulsatile liver, anasarca, ascites, peripheral edema or sacral edema. (Patient Care, Medical Knowledge)
- To accurately assess the presence or absence of congestive heart failure and discern the signs
 of cardiac tamponade at the bedside. To evaluate whether murmurs of valvular heart disease

such as mitral regurgitation, mitral stenosis, aortic regurgitation and tricuspid regurgitation contribute singularly or in combination to the clinical picture of congestive heart failure. (Patient Care, Medical Knowledge)

- To accurately assess the presence or absence of abdominal aneurysms and the presence or absence of peripheral vascular disease. (Patient Care, Medical Knowledge)
- To assess the normal auscultatory findings in pregnant patients and to be able to differentiate
 pregnant patients with valvular heart disease or congenital heart disease from physiological
 heart sounds of pregnancy. (Patient Care, Medical Knowledge, Practice-Based Learning)
- To become skilled in ECG interpretation of hypertrophy, conduction disturbances, heart block, WPW, acute infarction versus chronic infarction pattern. In addition to recognizing electrolyte disturbances and its effect on the ECG, the cardiac fellow should be able to accurately interpret supraventricular arrhythmias, especially with regard to the differentiation of atrial fibrillation, from atrial flutter, re-entrant supraventricular tachycardia and multifocal atrial tachycardia. To be able to evaluate wide complex tachycardias and differentiate ventricular tachycardia from supraventricular tachycardia with aberration or pre-excitation and to recognize the different forms of ventricular tachycardia, monomorphic from polymorphic and torsade-des-pointes. (Patient Care, Medical Knowledge, Practice-Based Learning)
- To learn how to interpret cardiac images (chest X-ray, CT, MRI, nuclear, echo, and angiograms) focusing on assessment of heart structure and function. (Patient Care, Medical Knowledge, Practice-Based Learning)
- To learn to interpret laboratory data to assist with risk stratification and treatment. (Patient Care, Medical Knowledge, Systems-Based Practice, Practice-Based Learning)
- To understand the clinical value of different therapeutic interventions including medical, percutaneous, and surgical therapies as well as device therapy in the management of all types of adult cardiovascular disease. (Patient Care, Medical Knowledge, Systems-Based Practice, Practice-Based Learning, Interpersonal and Communication Skills)
- To interact with the health care team including nurses, physician assistants, technicians, social workers, nutritionists, physical therapists, respiratory therapists as well as other physicians. (Patient Care, Medical Knowledge, Systems-Based Practice, Interpersonal and Communication Skills, Professionalism)
- Learn how to utilize hospital and community resources for managing cardiac patients in the outpatient setting. Interact with staff in referring physician's offices, lipid clinics, coumadin

clinics, cardiac rehabilitation, visiting nursing services (VNA), the OASIS program, and hospice. (Systems-Based Practice, Practice-Based Learning, Patient Care and Interpersonal and Communication Skills)

- Demonstrate respect, compassion, integrity, and altruism in relationships with patients, families and colleagues. Demonstrate sensitivity and responsiveness to the gender, age, culture, religion, sexual preference, socioeconomic status, beliefs, behaviors and disabilities of patients and professional colleagues. Adhere to principles of confidentiality, scientific/academic integrity and informed consent. (Patient Care, Professionalism)
- Access and critically evaluate current medical information and scientific evidence. Use
 information technology or other available methodologies to access and manage information,
 support patient care decisions and enhance both patient and physician education. (Patient
 Care, Medical Knowledge, Systems-Based Practice, Practice-Based Learning and
 Improvement)

PRINCIPLE TEACHING METHODS

- An attending cardiologist will serve as a mentor for the cardiac fellow. The mentor and student relationship will be utilized as the main teaching method during daily clinical rounds.
 The fellow is expected to utilize all available scientific research, published guidelines and expert opinion to assist with decision making and learning.
- Discrepant findings on diagnostic data, controversial issues and differences of opinion will be discussed with the attending cardiologists.
- Combined management teaching rounds will be held with the consult fellow and other members of the consult services (i.e., medical residents and students) The daily teaching round component must occur at least three times per week for a minimum of 4 1/2 hours per week. Generally, a few cases will be presented on teaching rounds as a basis for discussion of such points as interpretation of clinical data, pathophysiology, differential diagnosis, specific management of the patient and the appropriate use of technology. Teaching rounds must include direct bedside interaction with the patient by the fellow and the scheduled teaching physician.
- The cardiac fellows will be responsible, on a rotating basis, for presenting educational information at selected conferences. Reporting the outcome of individual patients or groups

of patients will be required. Outcome assessments should include both short term and long term follow-up.

EVALUATION METHODS

• The attending cardiologist will utilize a standardized evaluation process to assess the performance of the cardiac fellow. A written evaluation of the cardiac fellows' performance on the consultative service will be made at the end of each rotation by the cardiology attending assigned to the consultative service. At the conclusion of each consultative rotation, the cardiology attending will evaluate each fellow according to the ACGME general competencies including: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice. In addition, bedside skills such as obtaining history, physical examination and performance of cardiac procedures will be evaluated. The cardiology teaching attending will meet with each cardiac fellow at the end of the rotation to review the written evaluation. Fellows are required to sign each evaluation in the presence of the cardiac attending.

EDUCATIONAL CONTENT

The consultation service will provide evaluations and patient care throughout the hospital including the medical and surgical floors, maternity suites, operation suites, recovery room and in the emergency department. Patients with a variety of cardiac disorders including coronary artery disease, hypertension, peripheral vascular disease, hyperlipidemia, valvular heart disease, myocardial and peripheral disease, endocarditis, pericardial diseases and congenital heart disease will form the case mix for the consultative service. Each patient is seen on a daily basis and if necessary more frequently and each patient will be reviewed by an attending cardiologist. Cardiac fellows will follow each patient throughout their hospitalization. Major procedures such as a cardiac catheterization, angioplasty, pericardiocentesis, cardioversion, tilt table testing, echo Doppler cardiography and stress testing will be performed in the appropriate laboratories. Emergent evaluations for acute chest pain, respiratory failure and cardiac arrhythmias will occur at the bedside.

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