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Recommended Curriculum Guidelines for Family Medicine Residents

Cardiovascular Medicine

This document has been endorsed by the American Academy of Family Physicians (AAFP), the Association of Departments of Family Medicine (ADFM), the Association of Family Medicine Residency Directors (AFMRD), and the Society of Teachers of Family Medicine (STFM).

Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Topic competencies, attitudes, knowledge, and skills that are critical to family medicine should be attained through longitudinal experience that promotes educational competencies defined by the Accreditation Council for Graduate Medical Education (ACGME) <http://www.acgme.org>. The curriculum must include structured experience in several specified areas. Most of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center. Structured didactic lectures, conferences, journal clubs, and workshops must be included in the curriculum with an emphasis on outcomes-oriented, evidence-based studies that delineate common and chronic diseases affecting patients of all ages. Targeted techniques of health promotion and disease prevention are hallmarks of family medicine. Appropriate referral patterns and provision of cost-effective care should also be part of the curriculum.

Program requirements specific to family medicine residencies may be found on the ACGME Web site. Current AAFP Curriculum Guidelines may be found online at <http://www.aafp.org/cg>. These guidelines are periodically updated and endorsed by the AAFP and, in many instances, other specialty societies as indicated on each guideline.

Each residency program is responsible for its own curriculum. ***This guideline provides a useful strategy to help residency programs form their curricula for educating family physicians.***

Preamble

Cardiovascular disease is a major cause of morbidity and mortality in our society. The family physician should be proficient in the diagnosis and management of a variety of cardiovascular disorders. Family physicians provide comprehensive and continuing care to individuals and families, with particular attention to behavioral and lifestyle factors.

The depth of experience for each resident depends on the expected practice needs of the resident, especially in terms of practice location, available facilities, and accessibility of consultants. At times the family physician may find it appropriate to seek consultation from a cardiologist to either manage or co-manage a patient for optimal care.

Competencies

At the completion of residency training, a family medicine resident should:

- Understand basic and clinical knowledge of cardiac anatomy and pathophysiology of common cardiovascular diseases. (Medical Knowledge)
- Perform an appropriate cardiac history and physical examination, document findings, develop an appropriate differential diagnosis, and plan for further evaluation and management. (Patient Care, Medical Knowledge, Interpersonal and Communication Skills)
- Use evidence based knowledge regarding primary and secondary prevention of cardiovascular disease. (Medical Knowledge, Patient Care)
- Review current practices regarding the care of patients with cardiovascular disease and develop plans to improve the care. (Patient Care, Medical Knowledge, Practice-based Learning and Improvement, Professionalism)
- Work with physicians, nurses, pharmacists, dieticians, and other health care professionals who care for patients with common cardiovascular diseases. (Patient Care, Medical Knowledge, Professionalism, Systems-based Practice)

Attitudes

The resident should demonstrate attitudes that encompass:

- The importance of physician and patient working as partners to promote optimal cardiovascular health.
- A compassionate approach to the care of patients with cardiac disease.

- The psychosocial and economic impact of cardiovascular disease on the individual and family and use of the health care system to assist as needed.
- Support of the individual and family through consultation, evaluation, treatment, and rehabilitation.
- The importance of lifestyle factors on the development and exacerbation of cardiovascular disease.
- A multidisciplinary approach to the care of individuals with cardiovascular disease.

Knowledge

In the appropriate setting, the resident should demonstrate the ability to apply knowledge of:

1. Normal cardiovascular anatomy and physiology
2. Changes in cardiovascular physiology with age and pregnancy
3. Risk factors
 - a. Coronary artery disease
 - i. Hyperlipidemia
 - ii. Cigarette smoking
 - iii. Genetic predisposition
 - iv. Sedentary life style
 - v. Hypertension
 - vi. Diabetes mellitus
 - vii. Obesity
 - viii. Nutrition
 - ix. Hormonal status
 - x. Emotional stress
 - b. Valvular heart disease
4. Cardiovascular history
5. Cardiovascular physical examination
6. Noninvasive examinations
 - a. Electrocardiography
 - b. Chest radiography
 - c. Stress testing, including treadmill/bicycle or pharmacologic techniques
 - d. Echocardiography/Doppler imaging, both rest and stress, using treadmill/bicycle or pharmacologic techniques

- e. Radioisotope imaging, both rest and stress, using treadmill/bicycle or pharmacologic techniques
 - f. ECG monitoring, in-hospital and ambulatory
 - g. Vascular Doppler and ultrasound examinations
 - h. Computerized tomography (CT)
 - i. Magnetic resonance imaging (MRI) and Magnetic resonance angiogram (MRA)
7. Invasive examinations
- a. Diagnostic cardiac catheterization and angiography
 - b. Diagnostic carotid and peripheral vascular angiography
 - c. Intracoronary and peripheral vascular intervention using appropriate devices
 - d. Internal monitoring devices
 - i. Central venous and peripheral arterial catheter
 - e. Electrophysiologic studies
 - f. Indications and contraindications of therapeutic interventions
 - i. Coronary artery bypass
 - ii. Angioplasty techniques and stent placement
 - iii. Pacemaker insertion
 - iv. Implantable cardioverter-defibrillator
 - v. Valve replacement/repair, percutaneous balloon valvotomy
 - vi. Electrophysiologic ablation
8. Relevant laboratory interpretation, including serum enzymes, isoenzymes, lipids, and b-type natriuretic peptide (BNP) or pro-BNP.
9. Specific diseases/conditions
- a. Coronary artery disease
 - i. Stable/unstable angina
 - ii. Myocardial infarction, with and without complications
 - 1) Cardiogenic shock
 - 2) Dysrhythmias
 - 3) Papillary muscle dysfunction and rupture
 - 4) Ventricular rupture
 - 5) Aneurysm
 - iii. Sudden death
 - b. Syncope, cardiogenic and non-cardiogenic

- c. Dysrhythmias
 - i. Tachyarrhythmia
 - 1) Supraventricular
 - 2) Ventricular
 - 3) Reentrant
 - ii. Bradyarrhythmia
 - iii. Ectopy
 - 1) Atrial
 - 2) Ventricular
- d. Hypertension
 - i. Essential
 - ii. Secondary
 - iii. Pulmonary
- e. Pulmonary heart disease
 - i. Cor pulmonale
- f. Heart failure
 - i. Systolic dysfunction
 - ii. Diastolic dysfunction
- g. Venous Thromboembolic disease (VTE)
- h. Valvular heart disease
 - i. Rheumatic
 - ii. Congenital
 - iii. Degenerative
 - iv. Mitral valve prolapse syndrome
- i. Congenital heart disease
 - i. Common left to right shunts (acyanotic)
 - ii. Common right to left shunts (cyanotic)
 - iii. Common obstructive problems
- j. Dissecting aneurysm
- k. Innocent heart murmurs
- l. Peripheral vascular disease
 - i. Aneurysm
 - ii. Carotid atherosclerosis
 - iii. Arterial disease
 - iv. Arteriosclerosis obliterans
- m. Cardiomyopathies
 - i. Congestive (dilated)
 - ii. Restrictive
 - iii. Hypertrophic cardiomyopathy
 - iv. Postpartum

- n. Pericardial disease
- o. Infection-related
 - i. Viral myocarditis
 - ii. Subacute bacterial endocarditis
 - iii. Kawasaki's disease
- p. Other cardiac disorders
 - i. Immunologic
 - 1) Acute rheumatic fever
 - 2) Autoimmune disorders
 - ii. Psychogenic
 - iii. Traumatic
 - iv. Nutritional
 - v. Myxoma
 - vi. Thyroid dysfunction
 - vii. Marfan syndrome
 - viii. Drug-related such as cocaine, steroids and chemotherapeutic agents
- q. Evaluation of cardiac patient for noncardiac surgery
 - i. Cardiac risk including preoperative assessment tools
 - ii. Preoperative and postoperative management
- r. Antibiotic prophylaxis for valvular disease

10. Cardiovascular pharmacology

Skills

In the appropriate setting, the resident should demonstrate the ability to perform or appropriately refer:

1. Diagnostic procedures
 - a. Performance of history taking and physical examination
 - b. Mechanics and interpretation of ECG
 - c. Interpretation of chest radiographs
 - d. Treadmill/bicycle stress test monitoring and interpretation
 - e. Ambulatory ECG monitoring and interpretation
2. Therapeutic procedures
 - a. Risk management
 - b. Cardiopulmonary resuscitation (CPR), both basic life support (BLS) and advanced cardiac life support (ACLS)
 - c. Treating dysrhythmias and conduction disturbances

- d. Use of external temporary pacemakers
- e. Management of acute myocardial infarction, postinfarction care, and complications
- f. Congestive heart failure
- g. Hypertensive emergencies
- h. Supervision and management of cardiovascular rehabilitation
- i. Psychosocial issues
 - i. Sexual functioning
 - ii. Depression
 - iii. Family dynamics
- j. Management of patients after an intervention
 - i. Lifestyle adjustments
 - ii. Coronary artery bypass surgery
 - iii. Valve surgery
 - iv. Congenital heart disease surgery
 - v. Catheter-related interventional procedures

Implementation

Core cognitive ability and skill may be obtained in block rotations or cardiology experiences in intensive care and cardiac care units. Residents will obtain substantial additional cardiology experience throughout the three years of experience in the family medicine center, on their family medicine service, and internal medicine rotations. It would be a reasonable goal during this time to accomplish proficiency in ECG interpretation and cardiopulmonary resuscitation.

Family medicine residents electing additional training in cardiology, particularly residents who are planning to practice in communities without readily available consultation resources, may require skills for which additional training in a structured cardiology education program is strongly recommended. Longitudinal experience in the center for family medicine and on the family medicine hospital service should add experiences in ECG interpretation, stress testing, coronary care, and continued follow-up of patients with cardiovascular problems.

Additionally, residents should be encouraged to evaluate the fashion in which they provide cardiology care for their patients. Using a Plan-Do-Study-Act cycle, learners should engage in practice-based learning and improvement to ensure that patients receive optimum care founded in evidence-based medicine.

Resources

Libby P, Bonow RO, Mann DL, et al. *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine*. 8th ed. Philadelphia, Pa: Saunders; 2008.

Wagner GS, Marriott HJ. *Marriott's Practical Electrocardiography*. 11th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2008.

Website Resources

Many resources are available on the internet, to include EKG interpretation and cardiac auscultatory tools. We do not endorse any particular site for these purposes but suggest a search for the most current products. Additionally, the following sites are refereed and useful in a cardiology curriculum:

American Academy of Family Physicians. Board review questions, including cardiology groupings. <http://www.aafp.org/online/en/home/cme/boardrev/questions.html>.

American Academy of Family Physicians, American Family Physician. Topics in cardiology. <http://www.aafp.org/afp/topicModules/viewTopicModule.htm?topicModuleId=4>. Updated June 14, 2011.

American College of Cardiology. <http://www.acc.org>.

American College of Chest Physicians Evidence Based Guidelines. <http://www.chestnet.org/education/hsp/guidelinesProducts.php>.

Centers for Disease Control and Prevention. <http://www.cdc.gov/HeartDisease/>. Updated July 7, 2011.

National Heart Lung and Blood Institute. <http://www.nhlbi.nih.gov/guidelines/>.

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