

Course Title

FUNCTIONAL ASSESSMENT OF PATIENTS WITH CARDIOVASCULAR DISEASES

Director

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Background & Objectives

Patients coming to the treadmill lab come for a variety of reasons including diagnosis of cardiovascular disease for persons with symptoms or risk factors, diagnosis of worsening heart disease, annual check-ups, pre and post heart transplant testing, pre kidney transplant testing and functional assessment. Functional assessment is done to evaluate the baseline status as well as the effects of a therapy on functional status (such as cardiac rehabilitation or heart transplant). Many patients with cardiovascular disease develop an impairment in exercise performance as a result of LV dysfunction, severe angina, or claudication. The goals of this course are to familiarize the residents/fellows/nurses/nurse practitioners with

1. appropriate assessment of patients scheduled for testing,
2. ensuring that the appropriate type of test and testing protocols are used
3. interpreting stress test results
4. when not to begin a stress test as well as when to stop a test.

Personnel

Participants will perform treadmills and other types of functional/clinical assessments tests with Dr. Judith Regensteiner and the other proctors.

Rotation Description

1. Month long rotation spent learning how to proctor stress tests- at least 50 stress tests must be attended by the trainee.
2. Pre and Post test
2. Exercise physiology lecture: Oxygen consumption: What does it mean and how can I use it clinically?

Curriculum:

Types of patients:

Symptomatic patients to determine whether ischemia is present

- in persons with history of heart disease
- in persons with no history of heart disease

Yearly check-ups

Work-up for heart transplant

Post heart transplant evaluation

Work up for kidney transplant

Evaluation of arrhythmias

Pre and Post test assessment for cardiovascular rehabilitation

Submaximal post-myocardial infarction test

Healthy voluntary subjects wanting to know fitness

Types of tests:

Treadmill or bicycle ergometer

Nuclear treadmill

Non-exercise stress tests

Oxygen consumption

Picking the right test:

Exercise

Non-exercise stress

Picking the right protocol

Bruce

Modified Bruce

Half Bruce

Congestive Heart Failure

Peripheral Arterial Disease

Understanding when to not begin a test

Relative contraindications

Absolute contraindications

What to watch for during a test (how to monitor and when to stop a test)

Warm-up

Cool-down

Heart rate

Blood pressure

EKG changes

Exercise performance

How to write-up a treadmill report

University of Colorado Health Sciences Center – University Hospital
Cardiology Rotation Medical Student / Internal Medicine Resident Curriculum

Educational Purpose:

The goal of the elective Cardiology rotation is to expose the physician-in-training (medical residents as well as medical students) to patients with common Cardiac diseases encountered in the primary care and subspecialty settings.

Specific learning objectives include:

1. Learn key elements in Cardiac history-taking.
2. Grasp the techniques and interpretation of the cardiac physical exam.

3. Develop appropriate differential diagnoses
4. Learn and practice common bedside procedures necessary in cardiac patients
5. Improve interpretation skills in common laboratory, EKG, echocardiographic and imaging procedures as they apply to the cardiology patient
6. Participate in the educational curriculum of the team by providing relevant literature and preparing a short lecture

Teaching methods:

Physicians-in-training are supervised by Cardiology Fellows and Attendings on the Inpatient and Consultation Cardiology services. Residents and students obtain histories, examine patients, identify critical issues, develop a differential diagnosis, and outline care plans. Teaching of residents occurs during formal rounds with presentations of new and existing patients. This includes history and physical examination skills at the bedside with the attending physician. Patient based bedside differential diagnosis and treatment plan decision-making are also discussed with the resident or medical student and remainder of the team. Cardiac physiology including pathophysiology, catheterization, angiography, echocardiography, radionuclide imaging and ekg interpretation, are also reviewed.

In addition to patient-based bedside teaching, the physicians-in-training also participate in formal didactic lectures several times per week by the attending physician and Cardiology fellow.

Physicians-in-training also participate in the weekly Cardiology Grand Rounds and Catheterization Conference.

Clinical experiences:

1. Patient mix and patient characteristics: Physicians-in-training are exposed to the wide variety of Cardiology patients including patients with coronary artery disease, heart failure, and arrhythmias. Patients are adults ranging in age from late adolescents to the elderly
2. Types of clinical encounters: Most encounters occur in the inpatient setting with the physician-in-training acting as a consultant. These include patients admitted to the Cardiology, General Medicine and Surgery/Surgical Subspecialty services.

Learning resources:

These include textbooks and on-line resources available 24 hours a day through the Medical Library and Up-To-Date in Medicine. Lectures and conferences as outlined above are mandatory for the physician-in-training. Residents and medical students are also encouraged to bring in articles for the team on interesting patients they are caring for. Residents are also required to attend Medical Grand Rounds weekly.

Method of evaluation of resident competence

All residents are evaluated by the attending physician with regard to the completion and competence of the learning objectives outlined above using a competency-based resident evaluation form. Medical students are evaluated in a similar

manner. Residents and medical students meet with the attending physician in private and the performance is evaluated on the skills above including patient assessment, diagnostic decision-making and generation, procedural skills, and teamwork. In the event that a deficiency is identified, these issues are addressed when they become apparent.

Please also note that residents still attend their continuity clinics while on this rotation, so the following set of goals and objectives apply not only to the ETT portion but to continuity clinic as well.

I. Educational Purpose and Goals

Outpatient care is essential for the training of physicians who will enter the ambulatory workforce. Primary care electives focus on specialized areas of outpatient medicine, but all of them have similar purpose and goals. Exposure to an array of outpatients presenting to clinics is the primary goal. Unique interviewing skills, focused exams, and specialized procedures as well as common diagnostic differentials and treatment plans are components of each rotation. A complete list of Primary Care Electives is at the bottom of this document, and specialized features for each rotation are in a separate document.

II. Principal Teaching Methods

A. Supervised Direct Patient Care:

Residents encounter patients via the outpatient clinic setting. Faculty supervise histories, physical exams, and management. Patients are seen both under direct supervision and in concurrent (exception model) care with attending involvement. Evidence-based management is stressed, as well as an emphasis on cost-effective care and health-systems' impact on the treatment plan. Communication skills are stressed, and behavioral medicine skills are implemented as well.

B. Didactic Sessions

Residents are encouraged to attend the ongoing core didactic series of lectures while on most of these rotations. This includes Medical Grand Rounds and the Noon Conference Series. In addition, handbooks, core articles, and scheduled didactics are part of each of these rotations.

III. Educational Content

A. Mix of Diseases

Encountered patients have a variety of conditions representative of common medical problems.

B. Patient Characteristics

Patients reflect the clinic base which at most sites has federal payors, private commercial insurance, Medicaid and other state funded programs for underserved, and self pay.

C. Learning Venues

Determined by rotation.

D. Procedures

1. Interpretive skills for any tests related to the field of study are developed throughout the month.
 1. Blood tests
 2. Radiographic tests
3. Consultative skills: Residents are expected to learn the role of serving as a consultant on these rotations.

E. Ancillary Services

1. Subspecialist and Primary Care faculty
2. All medical subspecialty fellows
3. Residents from other specialty training programs: General Surgery, Psychiatry, Orthopedics, Neurosurgery.
4. Case managers
5. Nursing staff
6. Physical Therapy and Occupational Therapy
7. Respiratory Therapy specialists
8. Numerous other ancillary staff – clinical, administrative, and paraprofessionals

F. Structure of Rotation

1. These are weekday, business hours rotations without expectation for call or weekend availability.
2. These are in outpatient clinics, all with University affiliation or primary status. Some rotations can place residents on the ward services as a consultant or in the operating room if they choose. This is infrequent.

IV. Principal Ancillary Educational Materials

- A. All residents and managing physicians are provided with a Curriculum and Learning Objectives prior to the start of each rotation.
- B. Residents are assigned targeted reading in primary literature sources by Managing Attending and Teaching Attending physicians throughout the rotations.
- C. Full service libraries are present either immediately if on campus at Denison Library at the University of Colorado Health Sciences Center or at Presbyterian St. Luke's Medical Center. 24-hour access to on-line programs and literature is available.
- D. Computer-based resources are available at the hospitals to facilitate patient care, education and communication. The following are made available:
 1. Computer-assisted diagnosis and decision support
 2. Drug information including side effect and drug-drug interactions
 3. Electronic Medical Record internet accessibility
 4. Electronic textbooks of medicine

5. E-mail services
6. Internet access to medical sites on the World Wide Web
7. Laboratory and radiology results retrieval
8. Multimedia procedures training
9. Patient education materials

E. The Medical Record is totally computerized.

V. Methods of Evaluation

A. Resident Performance

1. Faculty complete computerized resident evaluation forms. The evaluation is competency-based. The evaluation is shared with the resident, who receives a copy, and is internally reviewed by the residency office. The evaluation is part of the resident file and is incorporated into the semiannual performance review for directed resident feedback.
2. Residents electronically record completed procedures. The supervising physician verifies that the resident understands the procedure's indications, contraindications, complications and interpretation.
3. In person feedback is given both at mid-month and at the end of the rotation. In addition, due to the nature of these rotations with intensive one-on-one experiences with dedicated faculty, there is ample time for feedback throughout each day/session.

B. Program and Faculty Performance

1. Upon completion of the rotation, residents complete a service evaluation commenting on the faculty, facilities and service experience. Evaluations are reviewed by the program and attending faculty physicians receive anonymous copies of completed evaluations. Collective evaluations serve as a tool to assess faculty development needs. The Training and Evaluation Committee reviews results annually.

VI. Institutional Resources: Strengths and Limitations

A. Strengths

- 1 Faculty. Faculty has won numerous awards for teaching excellence at each site.
2. Facilities. Sites are all at modern facilities with state-of-the-art care being practiced. Often with cutting edge research going on.
3. Patients. There is an excellent disease mix and patient panel.

B. Limitations

1. Continuity can be obtained for some visits throughout the month, but is not possible for the entire rotation given the outpatient nature and constraints of one month blocks.
2. Demand for certain rotations (examples – orthopedics and informatics) can outstrip availability. Additional high-quality mentors may need to be found.

VII. Rotation Specific Competency Objectives

A. Patient Care

1. History taking. Residents at all levels of training will collect a thorough history by soliciting patient information and by consulting other sources of primary data in a logical and organized fashion. History-taking will be hypothesis driven. Interviewing within the confines of clinic schedules will be learned, use of appropriate nonverbal techniques, and demonstration of consideration for the patient will all be expected. The resident will inquire about the emotional aspects of the patient's experience while demonstrating flexibility based on patient need.
2. Physical Exam. Residents at all levels of training will learn a focused physical exam relevant to the goals of the rotation, describing the physiological and anatomical basis for normal and abnormal findings.
3. Charting. Residents at all levels of training will record data in a thorough, systematic manner.
4. Procedures.

Throughout the course of the month, any procedures related to the rotation will be learned under close observation with the goal of having the resident become independently skillful by the end of the month. All residents will be expected to understand and be able to verbalize the indications, risks, benefits, after-care, and follow-up of any procedures used. They will perform the consent of patients, and they will be expected to track results, interpret results, and provide results to patients in a language patients can understand.

5. Medical Decision Making, Clinical Judgment, and Management Plans. All residents will demonstrate improving skills in assimilating information that they have gathered from the history and physical exam.

Residents will progressively be able to generate a rational differential diagnosis for the most common conditions seen on each rotation, and they will correctly identify and interpret abnormal findings. They will understand their limitation of knowledge and seek the advice of more advanced clinicians. Residents will establish an orderly succession of testing based on their history and exam findings. Basics of treatment as well as common side effects of treatment will be understood by the end of the rotation.

6. Patient counseling

Residents will be able to describe the rationale for a chosen therapy and will be able to describe medication side effects in lay terms. They will assess patient understanding and provide more information when necessary. Residents will

demonstrate the ability to be a patient advocate and also educate patients and families for enhanced compliance.

B. Medical Knowledge

Residents will consistently apply current concepts in the basic sciences to clinical problem solving. They will use information from the literature and other sources including electronic databases.

C. Interpersonal and Communication Skills

Residents will develop and refine their individual style when communicating with patients. They will strive to create ethically sound relationships with patients, the physician team and ancillary staff. They will create effective written communications through accurate, complete, and legible notes. They will exhibit listening skills appropriate to patient-centered interviewing and communication. Residents will recognize verbal and nonverbal cues from patients. They will exhibit team leadership skills through effective communication as manager of a team whenever applicable on these rotations. When practicable, residents are expected to assist junior peers, medical students, and other hospital personnel to form professional relationships with support staff. Residents will respond to feedback in an appropriate manner and make necessary behavioral changes. Senior residents should be able to successfully negotiate nearly all “difficult” patient encounters with minimal direction and function with decreasing reliance upon attending physicians.

D. Professionalism

All residents will demonstrate integrity, accountability, respect, compassion, patient advocacy, and dedication to patient care that supercedes self-interest. Residents will demonstrate a commitment to excellence and continuous professional development. They will be punctual and prepared for teaching sessions. Residents will demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, and informed consent. Residents are expected to show sensitivity and responsiveness to patients' culture, age, gender and disabilities.

E. Practice Based Learning and Improvement

Residents will use hospital and University library resources to critically appraise medical literature and apply evidence to patient care. They will use hand-held computers, desktop PC's and Internet electronic references to support patient care and self-education. They will model these behaviors to assist medical students in their own acquisition of knowledge through technology. They will assess the effectiveness of their own interventions and reorganize if they find inefficiencies or omissions. Whenever possible they will seek out and analyze data on practice experience, identify areas for improvement in knowledge or patient care performance and make appropriate adjustments. They will regularly demonstrate knowledge of the impact of study design on validity or applicability to individual practice.

F. Systems Based Practice

Residents will be sensitive to health care costs while striving to provide quality care. They will effectively coordinate care with other health care professionals as required for patient needs. Clinical practice guidelines will be used whenever applicable. Residents will be expected to seek out and understand current outpatient guidelines, but also recognize the limitations of these guidelines and when they may not be applicable. They will work with patient care managers, discharge coordinators and social workers to coordinate and improve patient care and outcomes.