Cardiovascular Fellowship Goals and Objectives

I. GOALS OF THE PROGRAM

The objective of the Fellowship Training Program in Cardiovascular Disease is to provide an academically and clinically rigorous training program to give the trainee outstanding skills in general cardiology as well as advanced training in either a clinical cardiology subspecialty or cardiovascular research. The aim of the program is to provide the trainee with the basic and clinical knowledge, procedural skills, clinical judgment, professionalism and interpersonal skills required as a specialist in cardiovascular diseases. This training will prepare our fellows to function not only as highly competent cardiologists, but also as either subspecialists in a clinical area or investigators in the field of cardiovascular research.

The program includes four trainees per year for a minimum of three years in general cardiology. The program provides the minimum training (COCATS 3) in all areas and additional training in echocardiography, cardiac catheterizations and electrophysiology.

The goals of the program specifically include achieving high quality training in each of the following areas as outlined in the Guidelines for Training in Adult Cardiovascular Medicine Core Cardiology Training Symposium (COCATS-3) published by the AHA and ACC:

• Clinical Cardiology: Includes training in cardiac physiology, coronary artery disease, valvular heart disease, vascular disease and hypertension.
• Electrocardiography, Ambulatory Electrocardiography and Exercise testing
• Cardiac Catheterization and Interventional Cardiology
• Echocardiography
• Nuclear Cardiology
• Electrophysiology, Cardiac Pacing, and arrhythmia management
II. CURRENT OBJECTIVES FOR THE MAJOR COMPONENTS OF THE PROGRAM

The fellowship program in Cardiovascular Disease consists of three years of training during which 24 months are dedicated to basic clinical training. Two hospitals participate in this program: University of California Davis Medical Center (UCDMC) and the VA Sacramento Healthcare System (VAS). The training program offers advanced training in clinical cardiology (nuclear cardiology, echocardiography, cardiac catheterization/angioplasty, electrophysiology, heart failure/transplantation) as well as academic research training. All fellows must complete a research project during the course of their fellowship, and must identify a clinical subspecialty or research area that becomes their primary focus after initial clinical training. The organization of the training program is flexible, and may be tailored to individual fellows’ goals and interests. It is the intent of the fellowship administration to individualize training within ACGME and ACC/AHA guidelines to optimize each fellow’s opportunities for a career in cardiology.

The general principles enumerated in the institutional and program requirements for residency education in internal medicine (1–4) are also applicable to training in cardiology. (See the World Wide Web site www.acgme.org for ongoing updates of program requirements.) Cardiology training programs must provide an intellectual environment for acquiring the knowledge, skills, clinical judgment, attitudes, and values that are essential to cardiovascular medicine consistent with the 6 core competencies delineated by the ACGME (medical knowledge, patient care, interpersonal and communication skills, professionalism, practice and learning, and improvement and
systems-based practice). Fundamental to this training is the provision of the best possible care for each individual patient delivered in a compassionate manner. All physicians undergoing training in cardiology must have and maintain humanistic and ethical attributes (1–7). The objectives of a training program in cardiology can be achieved only when the program leadership, supporting staff, faculty, and administration are fully committed to the educational program and when appropriate resources and facilities are present. Effective graduate education requires an appropriate balance between academic endeavors and clinical service. During training in cardiology, faculty encourage trainees to cultivate an attitude of scholarship and dedication to continuing education that will remain with them throughout their professional careers. The development of a scholarly attitude includes active participation in and completion of 1 or more research projects supervised by faculty actively engaged in research, ideally followed by publication in critically reviewed journals. Fellows are required to submit 2 or more manuscripts to Peer Review Journals prior to their graduation. These activities will provide additional experience in critical thinking and will help develop an attitude of scholarship and greater insight into the problems of analyzing and reporting data and other observations obtained from patients. Critical thinking is also developed in such educational activities as journal clubs, literature reviews, use of the Internet for self-directed learning, and the presentation of talks in seminars or conferences.

III. EDUCATIONAL OBJECTIVES AND CURRICULUM OF THE TRAINING PROGRAM

A. Clinical Service Overview

1. Duty Hours: Each fellow will spend no more than 80 hours per week, averaged over 4 weeks, caring for patients. Averaged over 4 weeks, each fellow will have one day (24 hours) in 7 free from duty.
2. Patient Population: The fellowship program in Cardiovascular Disease is designed to provide a high level of clinical training. Each rotation provides opportunity for the fellow in the following areas: observation and management of therapeutic interventions, progressive responsibility for the management of acutely and chronically ill patients, and teaching (medical students, residents, and colleagues). The hospitals that form the core of this program function as both primary and tertiary care institutions. UCDMC serves as a primary care hospital for the greater Sacramento area and as a tertiary care center for northern California. VAS is a primary care hospital for veterans in northern California. The patients from these institutions represent a wide variety of both common and rare cardiovascular disorders and provide excellent exposure to all areas of cardiovascular medicine.

3. Lines of Responsibility and Supervision: A general principle of the responsibilities of cardiology fellows is that all the care they provide is within the context of a teaching service. Other than, as is expected of all physicians, providing urgent/emergent care when others are not available to do so, cardiology fellows will provide care only to patients involved in a teaching process. In general, unless extenuating circumstances require deviation, orders will be written by the most junior house staff involved with a patient, with oversight by more senior house staff and faculty. Thus, if more junior house staff are immediately involved in the care of a patient, the cardiology fellow will write orders only to the extent dictated by his or her expertise or involvement (example: pre- and post-cath orders); the faculty will write only those orders required by level of experience (example: post angioplasty orders).
IV. Cardiovascular Competency

Faculty observe and evaluate factors which a written examination cannot test extensively. These evaluations are entered into the E*Value computer program. In addition, competency evaluations of 35 individual skills require a minimum number followed by an individual skill competency faculty evaluation. Additional 360 degree evaluations, mini-CEX, computer simulations, written area examinations, overall evaluation, and final review are part of the complete cardiovascular competency review. This comprehensive program assesses almost 2700 individual competency checks per fellow during training.

1. Patient Care

The fellow should provide patient care that is compassionate, appropriate, and effective care which encompasses the promotion of health, prevention of illness, treatment of disease, and end of life. At the cornerstone of competent patient care are the abilities to:

- gather accurate, essential information from all sources including medical interview, physical examinations, medical records, and diagnostic/therapeutic procedures;
- make informed recommendations about preventive, diagnostic, and therapeutic options and interventions that are based on clinical judgment, scientific evidence, and patient preference;
- develop, negotiate, and implement effective patient management plans and integration of patient care; and
- competently perform the diagnostic and therapeutic procedures inherent to the practice of internal medicine
2. **Medical Knowledge**

The fellow should demonstrate a command of established and evolving biomedical, clinical, and social sciences and the application of that knowledge to patient care and the education of others. Included in this context are:

- an open-minded and analytical approach to acquiring new knowledge;
- the ability to access and critically evaluate current medical information and scientific evidence;
- acquisition of applicable knowledge of the basic and clinical sciences that underlie the practice of internal medicine; and
- the application of this knowledge to clinical problem-solving, clinical decision-making and critical thinking.

3. **Practice-Based Learning and Improvement**

The fellow should use scientific evidence and methods to investigate, evaluate, and improve patient care practices. This effort encompasses the abilities to:

- identify areas for improvement and implement strategies to enhance knowledge, skills, attitudes, values, and processes of care;
- analyze areas for improvement and implement strategies to enhance knowledge, skills, attitudes, values, and processes of care;
- develop and maintain a willingness to learn from errors and use errors to improve the systems of processes of care; and
- use information technology and/or other available methodologies to access and manage information, support patient care decisions, and enhance both patient and physician education.

4. **Interpersonal and Communication Skills**

The fellow should establish and maintain professional relationships with patients, families, and other members of health care teams. Included are the abilities to:
• provide effective and professional consultation to other physicians and health care professionals and sustain therapeutic and ethically sound professional relationships with patients, their families, and colleagues;
• use effective listening, nonverbal questioning, and narrative skills to communicate with patients and families;
• interact with consultants in a respectful, appropriate manner; and
• maintain comprehensive, timely, and legible medical records

5. Professionalism

Fellows should demonstrate behaviors that reflect a commitment to continuous professional development, ethical practice, and understanding and sensitivity to diversity, as well as a responsible attitude towards patients, the profession, and society. Included are the abilities to:

• 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; and
• recognize and identify deficiencies in peer performance.

6. Systems-Based Practice

Fellows should have an understanding of the contexts and systems in which health care is provided and the application of this knowledge to improve and optimize health care. Included are the abilities to:
• understand, access, and utilize the resources, providers, and systems necessary to provide optimal care;
• understand the limitations and opportunities inherent in various practice types and delivery systems and develop strategies to optimize care for the individual patient;
• apply evidence-based, cost-conscious strategies to prevention, diagnosis, and disease management; and
• collaborate with other members of the health care team to assist patients in dealing effectively with complex systems and improve systematic processes of care.

**DOCUMENTATION**

Documentation files include:

a) bi-monthly evaluation forms
b) documentation of procedures performed and verification of technical proficiency;
c) brief notes substantiating critical incidents, counseling sessions, patient perspectives, and feedback on residents’ skills and performance;
d) 360 degree rotation evaluations
e) reports of mini-CEXs or other direct observations; e) assessment of research performance, when applicable; and f) semiannual evaluation summaries.
f) Individual skill competency evaluations
g) area examinations

**TYPES OF FEEDBACK**

Both computerized and verbal feedback are provided at the end of each rotation. Summary verbal and written feedback is given every 6 months.
The Mini-CEX: The mini-clinical evaluation exercise (mini-CEX) is available for attending evaluation on any service. The purposes of the mini-CEX are:

a) observing residents while they conduct a focused task in any setting;

b) rating residents on several dimensions of competence; and

c) providing residents with educational feedback

ADDITIONAL EVALUATION METHODS

Simulations and Models: Computer-based simulations assess use of knowledge in diagnosing or treating patients or evaluating procedural skills. The Sim Suite provides comprehensive technical simulations.