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UNIVERSITY OF TEXAS – HOUSTON MEDICAL SCHOOL  
DEPARTMENT OF INTERNAL MEDICINE  
DIVISION OF CARDIOLOGY

Cardiology  
Fellows  
Handbook

DIVISION OF CARDIOLOGY

# Cardiology Fellows Handbook

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## **Introduction**

The purpose of this handbook is to describe all practical aspects of the Fellowship Program in Cardiovascular Medicine at The University of Texas Medical School at Houston. The handbook supplements the Graduate Medical Education Trainee Handbook. The broad objective of the fellowship program of the Division of Cardiology is to provide qualified physicians with a balance, structured and scholarly experience in clinical and experimental cardiology. The first goal is to train fellows in every facet of cardiovascular medicine. This experience includes patient care, teaching and the use of noninvasive and invasive techniques in cardiovascular diagnosis. The second goal is to encourage scholarly productivity by providing opportunities for both basic and clinical research. The fellowship consists of a minimum of three and a maximum of five years of training, at the end of which the fellow will or should have met the requirements for the qualifying board examination in cardiovascular medicine.

## **Rotations**

Fellows will be trained at [Memorial Hermann Hospital](#), the [Lyndon B. Johnson General Hospital](#), [St. Luke's Episcopal Hospital/Texas Heart Institute](#) and the [University of Texas M.D. Anderson Cancer Center](#). Of these four institutions, Memorial Hermann serves as the parent institution and the site for most of the rotations. While their responsibilities vary with each rotation, fellows are always expected to assume an active role in patient care and in the teaching of nurses, medical students and house staff. One year of the basic three-year program is devoted to research in the cardiovascular sciences. Specific information on training at each institution follows. Maps are available in the back of this handbook.

## **MEMORIAL HERMANN HOSPITAL**

**6411 Fannin \* Houston, Texas 77030**

### **Cardiology Inpatient Service/Coronary Care Unit**

The cardiology inpatient service at Memorial Hermann Hospital is composed of one cardiology team which covers patients in the coronary care unit (CCU) and the cardiology ward. Patients admitted by the UT faculty as well as select community physicians on the teaching service are followed by the inpatient cardiology team. Each team consists of one attending physician, four Internal Medicine Residents and four interns. Various numbers of medical students are also assigned to these teams on a monthly basis.

There is one CCU fellow who is responsible for all patients in the CCU service. The cardiology fellow is responsible for evaluation of all new admission to the CCU. He/she is responsible for supervision of the house staff and actively participates in the formulation of the diagnostic and therapeutic plan for each admission. The fellow should make daily rounds with the house staff on all patients on the team. Patients who have undergone cardiac surgery will still be followed daily in the cardiovascular surgery intensive care unit (CVICU) by the team, although direct involvement in patient care is usually minimal until the patient transfers out of the CVICU back to the cardiology wards. Once the patient is moved out of these units to the coronary intermediate care unit (CIMU), the house staff interacts directly with the cardiology attending. However, the CCU fellow will be expected to be available to help deal with any unexpected problems arising with these patients.

All Swan-Ganz catheter insertions and transvenous pacing catheter insertions are performed by the cardiology fellow or by one of the residents under the direct supervision of the fellow or the cardiology attending.

Attending rounds with the UT staff attending assigned to the team for the month generally are held from 10:00 am to 12:00 noon every day. This may be modified on an individual daily basis depending upon work activities, etc. The level of supervision provided by the attending will depend on the complexity of the case and the ability and experience of the particular fellow involved. The CCU fellow is typically responsible for 15-20 patients with a maximum of 25 patients. If this maximum number is reached, the fellow should inform the program director who will assign one of the other clinical fellows to assist with this service.

Occasional patients may be designated as “non-teaching patients”. In those instances, the attending staff physician is directly responsible for all aspects of the individual’s care. Cardiology fellows, residents, interns and students will not routinely participate in the care of these individuals, however, may perform specific tasks at the discretion of the attending staff. As with all patients, emergency medical services will be administered to non-teaching patients by cardiology fellows in the course of their duties on the Code Team or as a bystander until the attending staff physician is directly available to assume these responsibilities.

## **Cardiology Consult Service**

The cardiology consult service provides consultative services for all other services and requesting physicians at Memorial Hermann Hospital. The team consists of an attending, two upper level residents, and a variable number of third and fourth-year medical students. The fellow is expected to evaluate all consult patients on the day the consult is requested and to promptly discuss the case with the UT-Cardiology faculty. The fellow is responsible for supervision of the residents and actively participates in the formulation of the diagnostic and therapeutic plan for each admission. The fellow should make daily rounds with the house staff on all patients. Attending rounds are daily and will vary according to the preference of the individual attending. The typical number of patients the cardiology fellow is responsible for is 10-12 cases with a maximum of 20 patients. If this maximum number is reached, the fellow should inform the program director who will assign one of the other clinical fellows to assist with this service.

Emergency consults (5:00 p.m. to 7:00 a.m. and weekends) are first seen by the in-house cardiology resident. The resident must then discuss the case with the in-house fellow. If necessary, the patient is then seen by the in-house cardiology fellow. During these hours the on-call cardiology attending carries the ultimate responsibility and should be notified of the consult and the fellow’s assessment.

## **Nuclear Cardiology**

The facility performs between 200-250 procedures per month. The fellow’s responsibilities include obtaining an informed consent and brief history and, if pertinent, perform a focused examination. He/she is responsible for supervising all stress nuclear procedures, as well as regular exercise ECG testing. Supervision is provided by one of the nuclear cardiologists.

Fellows are expected to interpret the stress ECGs and nuclear images prior to the reading session with the attending to maximize the educational content. Nuclear studies and exercise ECGs are read by the attending staff each weekday between 4:00-6:00 p.m. Fellows are allowed educational leave to attend an appropriate course to

fulfill the NRC requirements for 200 hours of classroom training. During the rotation, trainees are expected to correlate all nuclear cases with other imaging modalities if available.

## **Echocardiography**

Approximately 7000-8000 studies per year, including between 600-700 transesophageal studies and around 200 stress studies are performed in the Echocardiographic laboratory in Memorial Hermann Hospital. The fellows are under the supervision of an echo faculty at all times commensurate with the level of training of the trainee as determined by the echo faculty. Fellows will receive instruction on performing echocardiograms by the ultrasonographers designated by the laboratory director and must perform 150 studies in the first 3 months. The fellow's responsibilities include obtaining an informed consent and brief history and, if pertinent, perform a focused examination on all patients undergoing transesophageal or stress Echocardiographic examinations. Trainees will be directly supervised for all transesophageal and stress studies by echo faculty.

All studies interpreted by fellows are over-read by the echo faculty when the trainee will gain one-on-one teaching from the faculty. Trainees are expected to enter Echocardiographic measurements and quantitative data into the computerized reading station.

## **Cardiac Catheterization**

The fellow will participate in the initial evaluation of all patients scheduled for cardiac catheterization, and develop skills in diagnostic techniques under the direction of the attending. The fellow will see patients the day prior to the procedure, taking a complete history and physical, reviewing the chest x-ray and ECG, as well as the laboratory data. The patient will then be instructed on the procedure, and informed consent will be obtained. This applies for both patients being pre-admitted for outpatient procedures as well as inpatients prior to catheterization. The day of the procedure, the fellow will perform the catheterization under the direction of the attending to the level of his/her experience. After each procedure, the fellow will notify the house staff, and write post-catheterization orders as appropriate; and will complete the cardiac catheterization report prior to leaving the catheterization area. In the event of complicated catheterization, such as valve cases, complete analysis of the data will occur prior to formulation of the final version of the catheterization report. The fellow will review the angiographic and hemodynamic results of the case with the attending prior to final completion of the catheterization report. After the procedure, the fellow will discontinue sheaths as appropriate. The fellow will write a note on the chart the evening of the procedure, noting status of distal pulses, presence of absence of hematoma and any other potential complications that may have occurred. The

attending will be notified of any significant complications immediately. The day following the procedure (for inpatients), wound checks will be done by the fellow. Distal pulses will be noted in the chart on all catheterization patients. Any post-catheterization complications will be noted in the chart. The cardiac catheterization fellow who was involved in their diagnostic or therapeutic procedure will follow patients who subsequently undergo cardiac surgery.

## **Cardiac Electrophysiology**

Fellows spend a minimum of 2 months in Cardiac Electrophysiology. Fellows will assist EP faculty with all inpatient arrhythmia/EP consults. The trainees are expected to perform a comprehensive history and physical and formulate a diagnostic and therapeutic strategy for each consult and present the case to the EP attending. Trainees will also perform tilt tests and will participate in invasive EP studies, ablations, pacemaker and defibrillator implants. Fellows will be expected to pre-op. and consent patients, participate actively in the procedure, prepare procedure reports and monitor patients in follow-up, under the supervision of the respective attending physician. Whenever the fellow is unable to pre-op., a patient, he or she will notify the appropriate attending physician to assume responsibility for the task. In addition, fellows will be expected to read ECGs, Holter monitors and transtelephonic monitoring reports (event recorders and pacemaker surveillance) at the Memorial Hermann Heart Center on a daily basis Monday through Friday.

Fellows will attend the Arrhythmia Clinic two half-days a week and the Pacemaker Clinic on two half-days a week. It is anticipated the trainee will see at least 20 device patients each month at this latter clinic.

## **Electives**

Elective time is available in echocardiography, nuclear cardiology, cardiac catheterization, clinical Electrophysiology, cardiac rehabilitation, preventive cardiology, pediatric cardiology, clinical and basic cardiovascular research.

## **Fourth Year**

A fourth year of clinical training leading to added qualification in interventional cardiology, clinical Electrophysiology or echocardiography is currently available and will be awarded on a competitive basis to applicants from within and outside the program. A fourth and fifth year is available for those fellows seeking to establish themselves in a research field with view of a career as independent investigators in academic cardiology.

## **Cardiac Rehabilitation**

All fellows spend approximately 3 days per week for 2 months in Cardiac Rehabilitation. Fellow's responsibilities during the rotation include obtaining an informed consent and brief history and, if pertinent, perform a focused examination in patients undergoing stress testing. Trainees are also responsible for supervising and interpreting stress tests. He/she also participates in teaching rounds and weekly conferences that take the form of case presentations and review of the pertinent literature.

## **LYNDON B. JOHNSON GENERAL HOSPITAL**

**5656 Kelly Street \* Houston, Texas 77026**

Two fellows (1 first year, 1 upper level) are assigned to the Cardiology Service at the LBJ General Hospital. The first year fellow will be responsible for the CCU and Cardiology Consult Services. The upper level fellow is responsible for the echocardiography laboratory, including transesophageal (TEE) and stress echo.

## **Cardiology Service**

One fellow is assigned to cardiac patients in the CCU and in the Holding Unit of the Emergency Room. The fellow is notified of admission by the house staff and sees the patients as soon as possible, takes a complete history, performs a physical exam and reviews the treatment plan with the house staff. The fellow is expected to write a comprehensive admitting note and daily progress notes as long as the patient is in the hospital. The fellow makes himself/herself available for placement of arterial lines, Swan-Ganz catheters and temporary pacemakers or the supervision thereof. If necessary, he/she will call in either the attending or the invasive fellow on call.

The fellow is also expected to see all cardiology consults and to leave comprehensive notes and explicit recommendations. The fellow will meet daily with the attending on the consult service and round with the attending on all new and active consult patients. The fellow meets each day at 10:00 a.m. in the CCU with the attending for teaching rounds on patients in the cardiology service. When a patient is discharged from the CCU or from the Holding Unit, the patient is transferred to a general internal medicine team. The general medicine team will henceforth serve as the primary caretaker of the patient and the cardiology service will continue to serve as a consulting team, if necessary. The typical number of patients that the cardiology fellow is responsible for is 10-12 patients, with a maximum limit of 18 patients. If this maximum limit is reached, the fellow should notify the attending or program director so that patients can be assigned to one of the other LBJ cardiology fellows. In addition, the first year

fellow will supervise the performance of exercise and pharmacological stress tests, interpret electrocardiograms, and interpret Holter monitors. These tests will be reviewed with the noninvasive attending physician on a daily basis.

## **Echo Lab**

One upper level fellow is assigned to the echocardiography lab. The fellow is expected to perform a number of duties in the echo lab including a) supervision of stress echo tests and their interpretation; b) interpretation of echocardiograms; and c) performance and interpretation of transesophageal echos (TEE). The fellow's responsibilities include obtaining an informed consent and brief history and, if pertinent, perform a focused examination in patients undergoing stress testing or TEE. The trainees are expected to be available for the final interpretation of the noninvasive tests by the attending.

## **Cardiology Clinic**

Fellows are expected to attend the weekly cardiology clinic on Wednesdays from noon until 5:00 p.m. On average, about 35 patients are seen together with the attending, other cardiology fellows assigned to LBJ Clinic, and residents and students. The fellows are responsible for follow-up arrangements and prescriptions.

## **Night and Weekend Call**

Fellows are expected to take weekend and night call from home on alternating assignments. The schedule is created on a month-to-month basis by the chief cardiology fellow.

## **LBJ Courtesies**

### **Office of the Chief of Staff**

This office, Room 1EC 73 029 (713-566-4646) is located on the first floor of the hospital, at the East End of the building, across from the Adult Emergency Center. Office hours are 7:30 am to 5:00 pm Monday through Friday. **All fellows are required to sign-in with this office at the beginning of each rotation at LBJ.** Monthly On-call Books and Didactic Conference Schedules are available in this office.

### **Provider Number**

The Harris County Hospital District issues each physician a unique Provider (ID) number to be used in patient care. The computerized hospital systems such as physician orders, pharmacy and medical records dictation require this number. This

number is issued during the sign-in process by Physician Services Administration office located across from the Pediatric Emergency Center, Room 1PE 18 005, phone 713-566-4656.

**UT/LBJ Security Access Card**

This card, which serves as an access key card to parking lot and to the hospital building, as well as and ID badge, is provided free of charge by Harris County Hospital District Security. This office is located at the Kelly Street entrance to the hospital, Room 1PV 10 001, phone 713-566-5305. The replacement fee for a lost badge is \$15.00.

**ST. LUKE'S EPISCOPAL HOSPITAL / TEXAS HEART INSTITUTE**

**6720 Bertner \* Houston, Texas 77030**


Two fellows are assigned to services at St. Luke's Episcopal Hospital (SLEH) / Texas Heart Institute (THI). Monthly evaluations are provided by the respective service attending.

**Transplant Services**

One cardiology fellow from the UT program will be assigned to the cardiac transplant service at SLEH. Service duties will include participation in the care of patients before and after cardiac transplantation.

Cardiac catheterization laboratory duties will include left and right heart catheterizations, coronary angiograms, ventriculograms, and the performance of endomyocardial biopsy and accompanying procedures on transplanted, or transplant accepted patients admitted to SLEH. For inpatient biopsy procedures in the above - described patients, the fellows assigned to the transplant service will have precedence over SLEH fellows regardless of the primary attending or SLEH fellow service assignment. Outpatient procedures and those performed on patients classified as "same day admission" are the responsibility of the SLEH fellow assigned to the attending physician's service.

In addition, when transplant service duties have been fulfilled, the fellow assigned to the transplant service will have the opportunity to assist with other procedures performed in the cath lab providing the following criteria are met:

 No other fellow has been assigned to the case

- ✍ The attending physician is a member of the “teaching staff”
- ✍ A diagnostic procedure or endomyocardial biopsy is the planned procedure

## **Clinical Cardiology**

The other cardiology fellow assigned to SLEH is assigned to a clinical cardiology service. He/she is responsible for evaluation of all new admissions during the week. He is responsible for overseeing the orders of the house staff and for designating specific patients for student evaluations. On all consult patients, a complete “History & Physical” should be dictated and an inclusive “Admission Note” should be included. If the patient has been recently seen in the outpatient clinic by a staff cardiologist, a brief note covering the intervening period should be included.

It is expected that the fellow’s clinical evaluations will be concise and complete, including in specific terms every relevant clinical diagnosis whether a cardiologic problem or not.

The fellow is responsible for writing the initial orders and for formulating diagnostic and therapeutic plans. He should assist house officers and supervise their orders. Pre-catheterization orders are the fellow’s responsibility. Similarly, it is his/her duty to assure that catheterization permits have been signed before the intended study. The fellow should write post-catheterization orders and a brief synopsis of the catheterization procedure.

The fellow should be familiar with each patient on whom he will assist during the catheterization procedure. He should be thoroughly acquainted with the patient’s past medical history and have reviewed all pertinent, noninvasive data. He is to assist the staff cardiologist to a degree appropriate for his level of training. He is to review all cineangiograms and is expected to evaluate all hemodynamic and electrophysiologic data. He is encouraged to make a pictorial assessment of the patient’s coronary anatomy and to suggest appropriate therapy.

The fellow is encouraged to attend all didactic lectures. If his assigned service is presenting at the cardiology catheterization and angiogram conference, he may be called upon to present at this conference.

**UNIVERSITY OF TEXAS M.D. ANDERSON**  
**CANCER CENTER**

**1515 Holcombe Blvd. \* Houston, Texas 77030**

Two fellows are assigned to the cardiopulmonary section at the University of Texas M.D. Anderson Cancer Center (UTMDACC). The fellows will work under the direction of Dr. Edward Yeh, Chief of the Cardiopulmonary section.

One fellow will work with one of the UTMDACC faculty and his nurse on the consult service. This fellow is expected to perform a comprehensive history and physical and formulate a diagnostic and therapeutic strategy for each consult and present the case to the attending cardiologist. The fellow should make daily rounds on all patients on the service and write daily progress notes on all patients. Fellows will also perform diagnostic left and right heart catheterizations, pericardiocentesis, temporary pacemaker implantation under the supervision of the attending cardiologist. The typical number of patients the cardiology fellow is responsible for is 10, with a maximum limit of 20. If this limit is reached the fellow should inform the program director who will make alternative arrangements with Dr. Yeh.

The second fellow will be assigned to the non-invasive lab at the UTMDACC. This fellow's responsibilities include performing transthoracic and transesophageal echocardiograms and interpreting these studies. The fellow will also supervise stress tests and interpret both the ECG and accompanying imaging study (nuclear/echo).

## **Other Clinical Responsibilities**

### **ECG Readings (Monday-Friday)**

The Cardiac Electrophysiology service fellows will ready daily at 8:00 a.m. with the students and residents on the consult service in the Memorial Hermann Heart Station.

### **CIMU**

The Cardiac Intermediate Management Unit is a 43-bed telemetered unit with a high nurse/patient ratio. Ventilators and infusion drugs (e.g., lidocaine) can be used on this floor. Almost all of the patients on this floor are covered by the cardiology service. Although any medical team can admit to the CIMU, telemeters must be released by the CCU or on-call fellow.

### **Teaching**

Aside from routine teaching of house staff and students on the CCU and consult rotations, each fellow will be asked on occasion to give more formal lectures on various topics to medical students, nurses and technical staff, as well as sessions on physical diagnosis to second-year medical students.

**Outpatient Clinic**  
**Center for Cardiovascular Medicine**  
**6<sup>th</sup> Floor, Hermann Professional Building**  
**6410 Fannin \* Houston, Texas 77030**

Independent of all clinical rotations, outpatient sessions will be held one half-day weekly for all fellows at the Center for Cardiovascular Medicine.

A faculty member will be available to discuss all new patient referrals to cardiology and assume ultimate responsibility for all patients seen by the fellow. Patients referred from outside physicians require a follow-up letter after the patient has been seen. All charts, orders and charge documents must be signed by the faculty member.

When the fellow is scheduled to be on leave, it is the fellow's responsibility to cancel his/her clinic. This is done by notifying the head nurse, the appointment clerks, and the nursing staff. It is recommended that a colleague be designated to take patient calls during the fellow's absence.

## **Research Opportunities**

The Division of Cardiology maintains a diverse program of research activities in molecular/cellular cardiology to cardiovascular physiology and clinical cardiology. All new fellows are encouraged to inform themselves or possible projects available to them.

## **Ancillary Courses**

### **Advanced Cardiac Life Support (ACLS)**

ACLS certification is required for all fellows, and it the fellow's responsibility to keep certification current. Courses are offered in various locations throughout Houston, in addition to those offered by Memorial Hermann Hospital. The list of courses in the area can be obtained by contacting the [American Heart Association](#) at 713-610-5000.

### **Radiation Safety Courses**

The UTHSC Radiation Safety Division offers a short course in Radiation Safety several times a year. It is expected that each fellow will complete this course successfully within the first three months of his/her first year.

## **Policies and Procedures**

### **Medical Licensure Application**

Those fellows entering the program on an Institutional Permit may choose to apply for a permanent license during fellowship training. Applications are requested from the [Texas State Board of Medical Examiners](#) in writing or can be downloaded from their website. The process is lengthy and detailed; it is recommended that application instructions be followed carefully. At the current time, the State Board does not accept National Board exams for licensure in Texas. The FLEX is being phased out and will be replaced by the new USMLE (United States Medical Licensure Exam) as the national exam for licensure. The Medical School's liaison with the State Board is [Florinda Guerra](#) in the Graduate Medical Education office. After obtaining a permanent license, a [Texas Department of Public Safety \(DPS\) Controlled Substances Registration](#) number must be obtained prior to application for a [Federal Drug Enforcement Agency \(DEA\)](#) number.

### **Professional Liability Insurance**

Professional Liability insurance is provided through the University of Texas System Professional Liability Self-Insurance Program at no cost to the fellow. A current Institutional Permit or current Permanent Texas license is necessary to obtain insurance coverage. **Copies of renewed IPs or Texas licenses must be submitted each year to continue coverage. PLI coverage will be suspended immediately if you allow your Texas license or IP to expire.**

The fellow will be covered by PLI when performing his/her assigned duties within the program. Such coverage is valid only at the affiliated hospitals and clinics to which the fellow is assigned through the program. Current limits of coverage are \$100,000/\$300,000. PLI provided does not cover any professional activities other than those assigned through the program.

### **Fellowship Administrative Office**

The fellowship office is located in Room 1.240A of the Medical School Building (in the orange section). The fellowship coordinator will facilitate communication between fellows and the University where needed. All fellows' records are kept in this office. Please be sure to inform the coordinator of any change in home address or phone number. Also, you will need to make sure the office has current

copies of any licenses you may hold (DPS, DEA, Texas license). **Please inform the office of any emergencies or illnesses as soon as possible, or the latest within 24 hours of the occurrence (500-6577).**

#### **Chief Fellows**

Every year, two chief fellows will be selected by the Fellowship Committee to serve from July 1 to June 30. These will be second year fellows advancing to their third year who have demonstrated leadership and reliability within their first two years of training.

The basic responsibility of the chief fellows is to facilitate communication between the fellows as a group and the members of the faculty. The chief fellows are also responsible for preparing the monthly call schedule and conference schedule. Also, chief fellows maintain the program's monthly Journal Club, as well as contribute to scheduling weekly Cardiovascular Grand Rounds lectures.

#### **Night Call**

A cardiology fellow will remain in the hospital 24 hours daily on a rotating schedule at Hermann Hospital. In addition, cardiac catheterization fellows will be on call for emergency interventional therapy and back up for temporary pacemaker placement. All cardiology patients and cardiovascular surgical post-operative patients will be seen daily, and on weekends by the cardiology fellow assigned to the CCU service. The CCU service fellow will carry a code beeper and run all codes. At night the code beeper will be passed to the in-house fellow on call beginning at 6:00 pm. The call fellow will provide coverage until 7:00 am the following day. The call fellow will also approve emergency coverage until 7:00 am the following day. The call fellow will also provide emergency echocardiograms and emergency nuclear studies as necessary. The cardiology consult resident will see all follow-up consults on the weekend, and discuss them with the on-call fellow after 12:00 noon. New consults will be covered by the on-call fellow after 12:00 noon on weekends, and the attending on call for that particular service. The call schedule for the fellows is published by the 15<sup>th</sup> of the month. **If you have special requests such as vacations, etc., you must inform one of the chief cardiology fellows in writing by the 15<sup>th</sup> of the prior month. Also, if changes are made to the call schedule after it is published, you are responsible for notifying all concerned parties (i.e., Hermann page operator, fellowship office, and all other parties who receive the call schedule. There is a list on the fax machine in Room 1.246)** In house call is not required at LBJ Hospital. Coverage at LBJ, is in general, split between the fellows assigned to that service.

#### **Professional Society Memberships**

Fellows are encouraged to become Associates in the American College of Cardiology and to join the American Heart Association during their first year. Fees are modest compared to the benefits. Other cardiology societies also offer certain

benefits. For further information and application forms, please contact the fellowship office.

#### **Educational Videos**

The fellowship program has purchased a videotape series entitled "Mayo Cardiovascular Board Review". These tapes are for your use and are located in the fellowship office. You may check out only one tape at a time, and must return the tape within one week.

#### **Time Cards/Leave Policy**

Fellows' time and attendance is monitored through the GMEDS program. Each fellow's rotation schedule is entered into GMEDS by the Fellowship Coordinator on a monthly basis. All vacation, administrative and sick days are tracked through the GMEDS program and the fellowship office. You will accrue three calendar weeks of vacation per year and eight hours of sick leave per month of employment, not to exceed 30 days. Fourteen days of your vacation must be used in two one-week increments during the months that are indicated on your yearly rotation schedule. This one-week vacation will include the weekend, which means you will use seven days during that week. The other seven days may be taken at your leisure, however, still requiring the proper approvals and coverage arrangements. Weekends will not be included in these seven days.

Upper level fellows will be allowed five days of interview leave. If you require more than five days of interviews, the time will be deducted from your vacation balance. As with vacation, the leave will need to be approved and covered.

The following guidelines should be adhered to when scheduling your vacation time:

1. No vacation can be scheduled during the week of the American Heart Association meetings in November or the American College of Cardiology meetings in March.
2. You must be sure your vacation does not conflict with others who are scheduled to be off the same month if your rotations conflict.
3. You may schedule vacation during any rotation except for CCU-LBJ and Hermann as long as your attending approves. Coverage will need to be arranged as needed.
4. If you take vacation during a holiday week, the holiday will be included in your vacation time.
5. **Taking time off without submitting the proper notifications and paperwork may result in your being placed on Leave of Absence and having those days docked from your stipend.**

To take vacation leave, the fellow **must** complete a Leave Request Form (available in the fellowship office) at least one week **prior** to leaving, and must obtain the signature of the attending with whom you are assigned during the

vacation, as well as the signatures of the Fellowship Director and chief cardiology fellow. Absences for maternity/paternity must be covered by any accrued vacation and sick time. If this is not sufficient time to cover the required length of absence, the fellow must request of the Fellowship Committee a specific period of unpaid leave. LBJ Educational Office and Director and St. Luke's Educational Office will be notified during LBJ or St. Luke's rotation.

**NOTE:** Any unused vacation at the end of a fellowship year (June 30<sup>th</sup>) will not carry forward to the next year. However, paid sick leave will carry over.

#### **Educational Leave**

You may take one-week educational leave per year at the discretion of the Fellowship Director. As with vacation leave, you must fill out the form provided and submit to the fellowship office at least one week prior to the leave. You are also responsible for coverage in your absence.

#### **NOTE:**

If you are presenting an abstract at any national meeting, your absence will not be deducted from your educational leave balance.

#### **Job Opportunities**

Job opportunities are kept in a binder in the Fellow's Lounge. Updates are placed in the binder by the Fellowship Coordinator. Additional opportunities are posted to the fellows web page at [www.utcardiovascular.com](http://www.utcardiovascular.com) twice monthly.

#### **Bookstores**

Major's Scientific Books is a fairly large medical bookstore located at 7205 Fannin Street (713/799-9922). The University of Texas bookstore is smaller, but has most basic texts and computer software. It is located on the ground floor of the Freeman Building (next to MSB).

#### **Libraries**

The Jesse H. Jones Medical Library, the main medical library for the Texas Medical Center, is located directly behind the Medical School, and is open seven days per week until 11:00 pm (with shorter hours on weekends) and has virtually all journal and text material you will need. The Kirkendall Library is the medical resident's library. It is small, but conveniently located on the first floor of the Medical School Building and has most of the current medical journals on display.

#### **Evaluations and Personnel Files**

In compliance with the guidelines of the American Board of Internal Medicine, each fellow will be evaluated monthly by the respective attending faculty member. Fellows have the right to view their files, which are kept in the fellowship office

and are encouraged to do so at the end of each rotation. The Fellowship Committee will meet with each fellow twice yearly to review his/her progress.

**Meals**

The Hermann Hospital Cafeteria, first floor Robertson, is open daily for breakfast, lunch and dinner. A 10% discount is given if an ID badge is shown. The UT Medical School Cafeteria, on the ground floor of MSB, is open for breakfast and lunch. The Doctors Dining Room and the Physicians' Lounge at Hermann Hospital are serving the attending physicians of Hermann Hospital and are not open to the fellows.

**Fellowship Committee**

The Division Director and the Director of the Fellowship Program are supported by the Fellowship Committee, which consists of active cardiology faculty from Memorial Hermann Hospital, Lyndon B. Johnson Hospital, Texas Heart Institute and the MD Anderson Cancer Center. The committee meets bi-annually to evaluate the fellows in training and as necessary in order to address policies and administrative matters.

**Moonlighting Policy:**

The training program discourages moonlighting and emphasizes the academic aspects of the program. Residents are not required or generally prohibited from moonlighting. Nor are they encouraged to do so.

If moonlighting, at no time will the resident present themselves as an employee or representative of The University of Texas Health Science Center.

Moonlighting should be limited to no more than 3-4 nights per month, and only when it will not interfere with performance of one's clinical and academic duties.

Moonlighting is prohibited during standard work hours for a given service and when on-call.

All residents engaged in moonlighting must be licensed for unsupervised medical practice in Texas. It is the responsibility of the institution hiring the resident to moonlight to determine whether such licensure is in place, whether adequate liability coverage is provided (the University of Texas Health Science Center will not provide liability coverage for moonlighting activities) and whether the resident has the appropriate training and skills to carry out assigned duties. The sponsoring institution must ensure that the Program Director acknowledges in writing that he/she is aware that the resident is moonlighting and that this information is made part of the resident's file.

According to the ACGME institutional policy, each resident who engages in moonlighting must provide written notification of their intent and participation to

the Program Director and receive approval from same. Failure to notify the program director of moonlighting activities could result in disciplinary action.

Our department adheres to the guidelines set forth in the Graduate Medical Education Trainee Handbook, which states, “Under Texas law, extraneous activities involving the practice of medicine are available only to a Resident Physician who holds a medical license from the Texas State Board of Medical Examiners. An institutional permit does not entitle the Resident Physician to assume professional activities outside the Program.

The Program assumes no responsibility for the Resident Physician in such additional endeavors. PLI will not cover the Resident Physician for any liabilities incurred in such professional activity.

The listed fringe benefits, including responsibility for any injury or disability incurred, do not apply during such outside or unassigned activity. The Program reserves the right to initiate academic corrective action in the event outside professional activity interferes with the ability of the Resident Physician to fulfill satisfactorily the obligation of the Program.

In any event, any outside professional activities must be approved by the Program Director.

## **Contact Information**

Dr. Richard Smalling, Director of Cardiology Linda Emmert, Assistant	713-500-6559
Dr. Anne Dougherty, Director, Cardiac Arrhythmias and Pacing Elizabeth (Betty) Stiles, Assistant	713-500-6590
Dr. Francisco Fuentes, Director, Cardiology Fellowship Sandra Vick, Assistant	713-500-6576 713-500-6576
Renee Tagert, Fellowship Administrator	713-500-6577
Hermann Cath Lab	713-704-2360
Hermann CCU	713-704-3113
Hermann CIMU	713-704-4553
Hermann Emergency Room	713-704-4060

Hermann Heart Center	713-704-2165
LBJ Medicine Office	713-566-4550
LBJ Heart Station	713-566-5225
M.D. Anderson, Cardiology	713-792-6245

## Stipends and Benefits

### Stipends

*2003-200 Resident / Fellow Salaries*

PL-1	\$36,634.96
PL-2	\$37,346.78
PL-3	\$38,779.73
PL-4	\$40,049.93
PL-5	\$40,150.61
PL-6	\$41,723.05
PL-7	\$43,419.35

### UT SYSTEM MEDICAL FOUNDATION:

Residents/Fellows are employees of the UT System Medical Foundation. For further information, including more specific insurance plan information, please see the web page listed below:

<http://utsmf.hsc.uth.tmc.edu>

or call 713-500-5243

### Benefits

#### VACATION:

Resident Physicians classified as PL-1 are permitted the equivalent of two (2) calendar weeks of vacation each year. Resident Physicians classified as PL-2 and above are permitted the equivalent of three (3) calendar weeks of vacation each year. The Resident Physician must coordinate vacation scheduling with the respective Program, as well as with other Resident Physicians in the department to ensure adequate coverage. It is the responsibility of the fellow Resident Physicians

of the Program to cover for one another during a Resident Physician's absence. No more than two (2) consecutive weeks of vacation may be taken without the permission of the Program Director.

**SICK LEAVE:**

Paid sick leave accumulates at a rate of eight hours each month and accumulates to a maximum of thirty days. Paid sick leave carries forward from year to year, but will not be compensated upon termination. If the event an illness exceeds accumulated paid sick leave and vacation time, a leave of absence without pay may be granted.

**LEAVE OF ABSENCE (LOA):**

Leave of Absence (LOA), including Leave Without Pay (LWOP): All requests for LOA must be approved by the Program Director in accordance with applicable state and federal laws and accreditation requirements. LOA may be comprised of paid leave (including both paid sick leave and vacation) and/or LWOP. When LOA is requested for a medical reason (including pregnancy and maternity leave), the Resident must exhaust all accumulated vacation and sick leave prior to beginning any LWOP. Consistent with the Federal Family and Medical Leave Act of 1993 (FMLA), the UT System Foundation will grant up to 12 calendar weeks of leave in a 12-month period to residents who have been employed by the Medical Foundation for at least 12 months. The duration of LOA must be consistent with satisfactory completion of training (credit toward specialty board certification) which will be determined by each department in consultation with the GME Office. A Resident may continue his or her insurance coverage during LOA.

**RESIDENT MENTAL HEALTH CONSULTATION SERVICE:**

A Resident Mental Health Service offered through the Department of Psychiatry is available to all residents. Services offered are initial assessments including psychological and neuropsychological testing, if appropriate, and outpatient treatment, if needed. Arrangements for ongoing care will be individualized. The University Employee Assistance Program (EAP) is also available to the residents.

**UNIFORMS:**

Four three-quarter length coats are supplied to each Resident in his or her first year, and one additional coat is supplied in each subsequent year of training. Laundry services are provided by the department. To have your coats laundered, you may deposit them in the laundry basket in Cardiology, Room 1.246 MSB. Clean coats may be picked up in room 1.246.

Additionally, each Resident is furnished an official identification badge.

**FOOD SERVICES/MEAL TICKETS:**

Residents on duty are provided with adequate and appropriate food services 23 hours a day in all institutions. For each night of in-house call, the fellow receives two meal tickets (dinner and breakfast). These can be redeemed in the Hermann Hospital cafeteria. Meal tickets will be placed in your mailboxes (located in Room 1.246, orange section of the MSB) by the Fellowship Coordinator on the last day of the month.

**CALL ROOMS:**

Residents on call are provided with adequate and appropriate sleeping quarters. A call room is provided for the fellow taking in-house call at Hermann Hospital. The room is located in Cullen Pavilion, Room C236. Keys to the call room are issued through the Hermann Hospital House Staff Affairs office. A deposit is required.

**FELLOW'S LOUNGE:**

There is a Fellows' Room in the Hermann Heart Center available for your use. There are desks and four PCs (Windows). You may obtain a keycard to the front door from the Fellowship Office.

**PARKING:**

Free parking is provided to clinical fellows in the North Lot at the corner of Fannin and north MacGregor Drive, across from the Jones Pavilion entrance. Stickers and key cards are issued through the Hermann Hospital House Staff Office. A deposit of \$10.00 is required for the parking card. This parking card also serves as the keycard for the call room. A key card is to be used only by the person to whom it is issued. Violation of this restriction can result in the loss of parking privileges

**BEEPERS AND PAGING:**

Long distance beepers are provided for each fellow. In-house, the system can be accessed on a Hermann Hospital (704-) number by dialing "175" and the five-digit pager number for the individual. From outside the hospital, the system can be accessed by dialing (281/987-0444), then the pager number. The page operator can be reached at 704-4284.

**GROUP INSURANCE:**

- Health insurance is provided to the Resident at no cost. Dependent coverage is not paid, but is available at group rates.
- Dental Insurance is provided at no cost to the resident.
- \$100,000 of life insurance is provided to the resident. Dependent coverage is not provided, but may be purchased at group rates.
- Disability insurance is provided to the Resident at no cost. Monthly disability benefits start after total disability for a continuous period which exceeds the 30 day waiting period.

- Professional liability insurance is provided through the UT System Professional Liability Self-Insurance Program at no cost to the Resident. This insurance does not cover any professional activities not assigned by the training program.

**RETIREMENT BENEFITS:**

The UT System Medical Foundation makes available to residents and fellows a 403(b) tax-deferred annuity program. The program is currently offered through and administered by TIAA-CREF. Investment options include a traditional annuity, four common stock accounts, a real estate account, two bond accounts, a money market account and an equities and fixed income account. Participants may contribute through payroll deduction up to the IRS limit.

*\*\*This information was taken from the Graduate Medical Education webpage of the University of Texas – Houston Medical School. For additional information, please see <http://www.med.uth.tmc.edu/edprog/gme/gme.htm>*

## Description of Courses, Conferences & Seminars

	Monday	Tuesday	Wednesday	Thursday	Friday
AM		<b>7:00</b> Hemodynamics <i>Hrt Ctr Conf Rm</i>	<b>7:00</b> Board Review <i>Hrt Ctr Conf Rm</i>	<b>7:00</b> Core Lecture <i>Hrt Ctr Conf Rm</i>	
PM	<b>12:00</b> Monday Mini-Series <i>Hrt Ctr Conf Rm</i>	<b>12:00</b> EP Conference <i>Hrt Ctr Conf Rm</i>	<b>6:30</b> Journal Club third Week	<b>12:00</b> Cardiology Grand Rounds <i>MSB 2.135</i>  <b>5:00</b> Cath Conference <i>MSB 2.135</i>	<b>12:00</b> Echo Conference <i>Hrt Ctr Conf Rm</i>

### Monday Conference

A rotating schedule of didactic lectures ranging from nuclear cardiology, pediatric cardiology, interventional cardiology and preventive cardiology. This conference is from 12:00 p.m. to 1:00 p.m. in the Memorial Hermann Heart Center Conference Room.

### Hemodynamics

A didactic hemodynamic conference is held every Tuesday morning from 7:00 to 8:00 a.m. in the Memorial Hermann Heart Center Conference Room. A cardiac catheterization fellow will present a case, which will be discussed in detail, with regard to critical evaluation of hemodynamics, imaging physics, invasive monitoring, and specific procedural considerations. Attendance is mandatory.

**Electrophysiology Conference**

A rotating schedule of lectures given by EP faculty, EP fellows and cardiology fellows rotating in EP are given from 12:00 p.m. to 1:00 p.m. at the Heart Center Conference room every Tuesday. This conference includes a core series of didactic lectures and ECG reading conference.

**Board Review Series**

Wednesdays from 7:00 a.m. to 8:00 a.m. at the Heart Center Conference room is dedicated to a board review conference. Material from the American College of Cardiology's Self-Assessment Program and the Mayo Board Review are discussed with a focus on board-type subjects and questions.

**Core Lecture Series**

A core series of didactic lectures on the main topics in cardiovascular medicine will be given every Thursday from 7:00 a.m. to 8:00 a.m. in the Memorial Hermann Heart Center Conference Room. Attendance by all fellows is mandatory. The lectures begin in August and run through May.

**Cardiology Grand Rounds**

Held on Thursdays, 12:00 p.m., MSB 2.135. All fellows are expected to attend except those dealing with emergencies.

**Cardiac Catheterization Conference**

Held on Thursdays, 5:00 p.m. MSB 2.135. The cath fellows will present history, physical exam, labs, ECGs, x-rays, noninvasive studies and actual cath films. Usually, two or three cases are presented and discussed with the medical and surgical staff. All fellows are expected to attend.

**Dr. Willerson's Conference**

In addition to the Core Lecture Series, Dr. Willerson meets with all fellows to review selected topics in cardiology the third Thursday of every month from 6:00 to 7:00 p.m. in the Kirkendall Library, MSB 1.150

**Echo Conference**

Held on Fridays, 12:00 noon, Memorial Hermann Heart Center Conference Room. Rotating schedule includes lectures presented by an Echo attending alternating with conferences given by fellows rotating in echo with an Echo attending supervising.

**Journal Club**

Held monthly on the third Wednesday at 6:30 pm at various local restaurants. Articles are chosen by the fellow assigned to oversee Journal Club. Articles are distributed for review prior to the meeting. Two fellows will be assigned to present the content of the selected articles for discussion by the group. The location and time are announced several days in advance.

**EP Clinical Rounds**

Held on Tuesdays, 4:00 p.m., CIMU Conference Room. The CCEP fellow will present instructive cases and data from relevant invasive and non-invasive electrophysiologic studies for discussion. Fellows on the Cardiac Electrophysiology rotation are also expected to attend.

## **Bioethics Conferences – Director, Evelyn Chan, MD**

UT Cardiology have assembled a team of distinguished faculty and consultants who have unparalleled experience and specialized qualifications to ensure the success of this course.

### **Introduction**

The medical profession has long subscribed to a body of ethical statements developed primarily for the benefit of the patient. As a member of this profession, a physician must recognize responsibility not only to patients, but also to society, to other health professionals and to self. The following Principles adopted by the American Medical Association are not laws, but standards of conduct which define the essentials of honorable behavior for the physician.

- I. A physician shall be dedicated to providing competent medical service with compassion and respect for human dignity.
- II. A physician shall deal honestly with patients and colleagues and strive to expose those physicians deficient in character or competence or who engage in fraud or deception.
- III. A physician shall respect the law and recognize a responsibility to seek changes in those requirements which are contrary to the best interests of the patient.
- IV. A physician shall respect the rights of patients, of colleagues and of other health professionals and shall safeguard patient confidences within the constraints of the law.
- V. A physician shall continue to study, apply and advance scientific knowledge, make relevant information to patients, colleagues and the public, obtain consultation and use the talents of other health care professionals when indicated.
- VI. A physician shall in the provision of appropriate patient care except in emergencies, be free to choose whom to serve, with whom to associate and the environment in which to provide medical services.

VII. A physician shall recognize a responsibility to participate in activities contributing to an improved community.

**Course Objectives**

The primary learning objectives of these conferences are:

- To identify the ethical issues in a case and follow the guidelines in clinical ethics and decision making supported by the American College of Physicians.
- To determine whether a patient is competent to forgo life support and if not, to determine who the surrogate decision maker would be. To know and to determine the situation that may require either institutional or judicial review and/or intervention in the decision making process.
- To understand the difference between the substituted judgment standard and the best interest standard.
- To apply the benefits/burdens assessment in the decision to withhold life support..
- To review the Texas Natural Death Act and other state laws as they apply to a case.
- To review Do-Not-Resuscitate orders and when they are appropriate. To know that a physician has an ethical obligation to honor the resuscitation preferences expressed by the patient or surrogate decision maker. To know that physicians should not permit their personal value judgments about quality of life to obstruct the implementation of a patient's preferences regarding the use of CPR.
- To review what futility means. To know that physicians are not ethically obligated to deliver care that, in their best professional judgment, will not have a reasonable chance of benefiting their patients. Denial of treatment should be justified by reliance on openly stated ethical principles and acceptable standards of care. To understand the Memorial Hermann Hospital Futility Review Process.
- To review the hospitals' guidelines regarding Gene Therapy and ensure safe application of this technology in society.
- Understand ethical conduct in research

**Evaluation**

Evaluation by questionnaire will address program content, presentation and possible bias.

**Bibliography**

American Medical Association. *Code of Medical Ethics*. 1996-97 editions

Tottenham T: Hopkins J: Joy L: *Texas Medical Jurisprudence*. 9<sup>th</sup> Edition

Parmiev WW: Passamani ER: Lo B: 29<sup>th</sup> Bethesda Conference. *Ethics in Cardiovascular Medicine, 1997. Introduction* J Am Coll Card 1998 apr:31(5):917

**Biostatistics & Epidemiology Seminar****Director, Emma Cid, MD****Cardiology Service Meeting & Monthly Morbidity and Mortality Review****Director, Richard Smalling, MD****Introduction**

New clinical pathways and algorithms for managing patients with cardiovascular disease are discussed during this meeting. Also common clinical problems affecting the practice of cardiology in the hospital and the community are discussed. In this meeting cardiovascular morbidity and mortality cases are reviewed. Meetings are conducted the first Monday of each month from 6-7 PM in the Board Room at Memorial Hermann Hospital.

**Objectives**

The primary learning objectives of this conference are to:

- Establish practice guidelines for common cardiovascular clinical problems.
- Use cost effective strategies in the management of cardiovascular patients: and
- Review causes of morbidity and mortality and implement educational programs to remediate problems.

## **Cath Conference**

### **Director, Satyendra Giri, MD**

#### **Introduction**

These conferences are designed to examine current concepts and difficult management issues in congenital heart disease in the adult, valvular heart disease, coronary artery disease and peripheral vascular disease. It also serves as a forum for scholarly presentations by the fellows.

The conferences are attended by members of the university, private cardiologists and cardiothoracic surgeons. The didactic sessions include interesting case demonstrations, interactive discussions and multi-media presentations.

#### **Course Objectives**

The cardiovascular fellow who completes this course will be able to:

- Identify acute coronary syndromes
- Discuss new strategies for the treatment of Acute Myocardial Infarction
- Recognize Hemodynamic Monitorings and Cardiac Catheterization techniques
- Allow faculty and fellows up to date information in coronary syndromes and vascular heart disease

#### **Evaluation**

Evaluation by questionnaire will address program content, presentation and possible bias

#### **Bibliography**

Braunwald E. *Heart Disease A Textbook of Cardiovascular Medicine*. 5<sup>th</sup> ed. Philadelphia: WB Saunders. 1997

Pepine CJ, Hill JA, Lambert CR.. eds. *Diagnostics and Therapeutics Cardiac Catheterization*. Baltimore, MD: William and Wilkins. 1997.

Alexander WR, Schlant Robert C, Fuster Valentine, O'Rourke Robert A, Roberts Robert, Sonneneblick Edmund H, *Hurst's The Heart, Arteries and Veins*. 8<sup>th</sup> ed. New York: McGraw Hill. 1998.

# Congenital Heart Disease

## **Introduction**

A team of UT pediatric cardiology faculty and consultants at Baylor College of Medicine and Texas Children's Hospital have the experience and specialized qualifications to ensure the success of this course.

## **Objectives**

- Acquire familiarity with factors that predispose to congenital heart disease and genetic factors recognized with congenital heart disease
- Recognize ASD, VSD, PDA and other congenital heart diseases and the management of adults with congenital heart disease
- Integrate new advances and follow-up care in the management of TOF, single ventricle and cardiac repair of congenital heart disease
- Be exposed to common post-operative problems in complex repaired congenital heart disease

## **Core Lecture Series**

### **Director, Francisco Fuentes, MD**

#### **Introduction**

Treatment of heart disease is an art and one that the physician acquires during a lifetime of experience. However, the most effective treatment comes from an understanding of basic mechanisms responsible for heart disease and an appreciation of the relative benefits of various interventions and patient prognosis with and without specific treatment.

Cardiovascular disease not only strikes down a significant fraction of the population without warning but causes prolonged suffering and disability in an even larger number. In the US alone, despite recent encouraging declines, cardiovascular disease is still responsible for almost one million fatalities each year and more than one half of all deaths; almost five million persons afflicted with cardiovascular disease are hospitalized each year.

In recent years we have witnessed an explosive expansion of our understanding of the structure and function of the cardiovascular system; both normal and abnormal and of our ability to evaluate it in the living patient; sometimes by means of techniques that require penetration of the skin but also, with increasing accuracy by noninvasive

methods. Remarkable progress has been made in preventing and treating cardiovascular disease by medical and surgical means.

This course is designed to give the cardiology fellows complete and comprehensive lectures on all major cardiac problems that patients experience with emphasis on how to diagnoses, treat and prevent these problems. From basic physiology of normal and abnormal processed to the demographics of various diseases are reviewed. Interaction from those attending is welcomed and cases are also discussed.

**Objectives**

The learning objectives of this series are:

- To review the basic concepts and critical care in cardiology
- To review the valvular heart disease and its presentation, diagnosis and treatment
- To review the various aspects of Atherosclerosis, its pathogenesis, invasive and non-invasive methods of diagnoses, treatment and prevention. The basic defects at the molecular levels are stressed upon with emphasis on latest research in this area
- To review the presentation, diagnosis and treatment of Congestive Heart Failure, the latest techniques in management with emphasis on the value of nursing and patient education.
- To review the various presentations of arrhythmias their ECG diagnosis, EP studies involved and their pharmacological and invasive management.
- To review peripheral vascular diseases, their medical and surgical treatment modalities available to the physician.
- To review cardiomyopathies, their various etiologies, diagnosis and treatments.
- To review the various infectious and autoimmune diseases affecting the heart and vessels; i.e. rheumatic disease, viruses, SLE etc., their presentation, diagnosis and management.
- To review the various aspects of heart patients undergoing surgery and the preoperative care of cardiovascular patients.
- To review the importance of exercise and pharmacologic stress testing and cardiac rehabilitation
- To review nuclear cardiology, its benefits and pitfalls.

- To review the latest techniques in non-invasive diagnosis of cardiovascular problems like PET scans, TEEs and electron beam computer tomography
- To review cardiovascular demographics
- To review the importance of interpretation of medical literature
- To review the various diseases affecting the aorta, their presentation and management

**CORE CURRICULUM LECTURES:**

*(order of lectures and presenter as determined by the monthly conference schedule)*

1. Cardiovascular History and Physical Examination
2. Cardiac Rehab after Myocardial Infarct
3. Acute Coronary Syndrome
4. Nuclear Cardiology: Read with Expert
5. Acute Myocardial Infarct
6. Rheumatic Fever
7. Mitral Valve Disease
8. Aortic Valve Disease
9. Infectious Endocarditis
10. Congestive Heart Failure
11. Hypertrophic Cardiomyopathy
12. Dilated Cardiomyopathy
13. Restrictive Cardiomyopathy
14. Heart Transplantation
15. Congestive Heart Failure
16. Pericarditis
17. Carotid Artery Disease

18. Abdominal Aortic Aneurysm
19. Hyperlipedemia: Drug Treatment
20. Hyperlipedemia: Food and Life Style
21. Arteriosclerosis
22. Heart Disease in Pregnancy
23. Heart Tumors
24. Contrast Nephropathy
25. Connective Tissue Disease and Heart
26. Endocrine Disorders and Heart
27. Cardiovascular CT
28. Cardiac MRI
29. Cardiovascular Disease in Cancer Patients
30. Cardiovascular Changes Associated with Space Flight
31. Congenital Heart Disease in Adults
32. Bioethics, Ethics Cases
33. Catheterization of Congenital Heart Disease
34. Stroke and Cardiovascular Disease
35. Coronary Artery Bypass
36. Carotid Endarterectomy
37. Cardiac Valvular Surgery
38. The Genetic Basis of Cardiovascular Disease
39. Ventilator Management in CCU
40. Gene Therapy

**Bibliography**

Willerson JT, Cooley DA, Frazier HO, Sweeney MS, Kaplan N, Grundy SM, Packer M, Zipes DP: *Treatment of Heart Diseases*. Gower Medical Publishing

Braunwald E: *Heart Disease: A textbook of Cardiovascular Medicine*. 4<sup>th</sup> edition: WB Saunders Company

Willerson JT, Cohn J; *Cardiovascular Medicine* 1<sup>st</sup> edition. Churchill Livingstone 1995

Alexander WR, Schlant Robert C, Fuster Valentine, O'Rourke Robert A, Roberts Robert, Sonnenblick Edmund H; *The Heart, Arteries and Veins*, 8<sup>th</sup> edition. McGraw Hill: 1998

## **Electrophysiology Seminar**

### **Director, Anne H. Dougherty, MD**

**Introduction**

This seminar is designed to recognize, diagnose and select the most appropriate treatment for arrhythmias from the rapidly changing field of electrical, pharmacological and surgical modalities. This course will assist cardiovascular fellows who seek an in depth review of electrophysiology courses. This seminar meets every Tuesday at noon.

**Objectives**

The cardiovascular fellow who completes this seminar will be able to:

- Interpret arrhythmia patterns competently
- Understand the concepts of electrophysiology
- Identify and select the most appropriate treatment of arrhythmias
- Integrate new therapeutic advances in pacemaker, defibrillators and ablation
- To apply cost effective studies consistent with recently established practice guidelines

**Evaluation**

Evaluation by questionnaire will address program content, presentation and possible bias

**ELECTROPHYSIOLOGY/ECGLECTURES:**

*(order of lectures and presenter as determined by the monthly conference schedule)*

1. Arrhythmia Diagnosis: Strategies for Evaluating Complex Arrhythmias

2. PSVT: Mechanisms and Management
3. Primary Atrial Arrhythmias: Diagnosis and Management
4. VT and its Variants
5. Anti Arrhythmic Agents: Pharmacology & Clinical Usage
6. Risk Stratification
7. Pacemakers: Indications, Implantation and Basic Function
8. Pacemaker: Prescription, Programming and Troubleshooting
9. ICDs: Programming and Troubleshooting
10. Genetic Basis of Arrhythmias: Long QT Syndromes, Brugada Syndrome
11. Syncope: Diagnosis and Management
12. EP Fellow Presentations
13. 16-40 Interactive Discussions of EP Cases and ECG. Presentations by Cardiology Fellows on EP service, Memorial Hermann Hospital Consult Fellow, Memorial Hermann Hospital CCU Fellow. Discussions with Attendings.

#### **Bibliography**

Ellenberger KA; *Practical Cardiac Diagnosis: Cardiac Pacing*, 2<sup>nd</sup> ed. Cambridge. Blackwell Science, 1996

Zipes DP; *Cardiac Electrophysiology: From Cell to Bedside*. 2<sup>nd</sup> ed. Philadelphia, WB Saunders Company, 1995

Fogoros RN; *EP Testing*. 2<sup>nd</sup>. Cambridge; Blackwell Science, Inc. 1995

Gregoratos G, Cheitlin MD, Conill A; *ACC/AHA Guidelines for Implantation of Cardiac Pacemakers and Antiarrhythmia Devices*. JACC. 1998;31:1175-1209

Naccarelli GV. *Cardiac Arrhythmias: A Practical Approach*. New York: Futura Publishing Co., 1991

Okeefe JK, Hammill Stephen C, Freed Mark: *The Complete Guide to ECG*. Birmingham: Physicians Press, 1997

## **Genetics and Cardiovascular Medicine**

**Director, Dianna M. Milewicz, MD, PhD**

*(order of lectures and presenter as determined by the monthly conference schedule)*

### **Objectives**

- Review the genetic basis of disease, i.e., chromosomal disorders, single gene disorders and inheritance and polygenic disorders.
- Discuss the single gene disorders that have major cardiovascular manifestations, e.g., Marfan syndrome, hypertrophic Cardiomyopathy, and long Q-T syndrome
- Review methods to map and characterize genes causing human diseases, including linkage analysis, positional cloning and mutation detection
- Discuss DNA diagnostic tests available for the presymptomatic diagnosis of single gene disorders

## **Grand Rounds**

**Director, Richard W. Smalling, MD, PhD**

*(order of lectures and presenter as determined by the monthly conference schedule)*

### **Objectives**

The primary learning objectives of this conference are to:

- Incorporate the results of the latest randomized cardiovascular clinical trials into their practice pattern
- Integrate new advances in basic science into their practice
- Present and discuss research topics or research in progress
- Be exposed to national and international speakers in the field of cardiovascular diseases

# Hemodynamic Course

## Director, Satyendra Giri, MD

*(order of lectures and presenter as determined by the monthly conference schedule)*

### **Introduction**

This course is designed to examine the current practices and advances in cardiovascular physiology, preventive treatment of cardiac and peripheral vascular disease, valvular, coronary artery disease and cardiomyopathies. Additionally, the management of carotid, renal, aortic, and peripheral vascular diseases is discussed. Course topics will include coronary angiography, PTCA, stent placement, valvular dilatation, endomyocardial biopsy, intraaortic balloon placement, carotid and renal angioplasty, issues regarding cardiac and peripheral interventions in the catheterization laboratory, radiation safety, novel drug therapies and an update in future technologies.

A distinguished faculty with expertise in cardiovascular physiology, hemodynamics and interventions will conduct the outline course that includes didactic sessions, interesting case demonstrations, interactive discussions and multi-media presentations.

### **Objectives**

The cardiovascular fellow who completes this course will be able to:

- Become familiar with the proper recording techniques for hemodynamic measurement
- Understand the appropriate measurements and calculations for assessing cardiac shunts and valvular heart disease
- Review optimal strategies for the invasive assessment of valvular and coronary heart disease
- Define the organization, administration and characteristics of a cardiac catheterization laboratory
- Identify specific clinic states and their assessment and intervention by catheter techniques
- Describe the current status of PTCA, stent placement, stent grafting, radiation therapy and other measures to prevent restenosis in the vascular system

### **Bibliography**

Pepine CJ, Hill JA, Lambert CR eds. *Diagnostic and Therapeutic Cardiac Catheterization*. Baltimore, MD: Williams and Wilkins, 1997

Brown BG, Bolson EL, Dodge HT. *Dynamic Mechanisms in Human Coronary Stenosis*. Circulation. 1984; 70: 917-922

Hamon M, Bauters C, McFadden EP, Escudero X, Lablance JM, Bertrand ME; *Hypersensitivity of Human Coronary Segments to ergonovine 6 months after injury by coronary angioplasty; a quantitative angiographic study in consecutive patients undergoing single vessel angioplasty*. Eur. Heart J. 1996; 17:890-895

## **Journal Club**

### **Director, Stefano Sdringola, MD**

*(scientific articles and presenters as determined by the monthly conference schedule)*

#### **Introduction**

This is a monthly meeting hosted by the faculty in a local restaurant or a staff member's home. Fellows present journal articles selected from recent cardiovascular literature. Attendance to the Journal Club includes faculty and fellows

#### **Objectives**

- Understand recent literature from leading cardiology journals (Circulation, American Journal of Cardiology, Journal of the American College of Cardiology, and others) in the areas of basic research, invasive, non-invasive, preventive and clinical cardiology
- Encourage and build rapport among fellows and faculty in a collegial environment via the discussion of recent scientific advances
- Discuss the strengths and limitations of these articles

## **Molecular Cardiology**

### **Director, Heinrich Taegtmeyer, MD, D.Phil**

*(order of lectures and presenter as determined by the monthly conference schedule)*

#### **Objectives**

- To familiarize the fellows with myocardial and vascular molecular and all cell biology that they will be able and willing to read and understand the more basic articles in cardiovascular journals such as Circulation

- To encourage academically minded fellows to spend a year in a basic lab, after which they will continue in bench research or collaborate with basic scientists.

## **Non-Invasive Cardiology and Research Course**

### **Directed by, Francisco Fuentes, MD, S. Ward Casscells, MD, K. Lance Gould, MD, Mihai Croitoru, MD**

*(order of lectures and presenter as determined by the monthly conference schedule)*

#### **Introduction**

This course is designed to offer the cardiology fellows a comprehensive survey of non-invasive cardiology including basic and advanced cardiovascular ultrasound concepts and technology, advanced electrocardiography, nuclear cardiology, case presentations with significant educational content, and ongoing cardiovascular research presented by the fellows and their faculty mentor.

This course will assist cardiovascular fellows or physicians who seek an in-depth review of the latest findings in newer cardiovascular technology, disease management and treatment strategies and new research.

The fellow will receive educational material and annotated bibliography on site. This is an interactive course and multimedia material, videotapes and high technology equipment will be used during the course.

#### **Objectives**

- Interpret electrocardiographic patterns completely
- Recognize and select best clinical diagnosis associated with electrocardiography pattern
- Identify/demonstrate the pathophysiology, diagnosis and rapidly changing treatment of challenging cases in cardiovascular medicine
- Indications for noninvasive diagnostic procedures and recognition of limitations and deficiency in the interpretation of cardiovascular ultrasounds, electrocardiography, nuclear cardiology studies and research
- Understand basic concepts in echocardiography, electrocardiography, nuclear cardiology and research

- Interpret echocardiographic patterns, nuclear cardiology studies and research data competency

### **NUCLEAR CARDIOLOGY DIDACTIC LECTURES:**

1. Introduction to Nuclear Cardiology
2. Nuclear Cardiology Training and Licensure Requirements
3. Cardiac PET Scan
4. Read with Expert
5. Physics and Instrumentation
6. Radiopharmaceuticals
7. Radiation Safety
8. Risk Stratification
9. Perfusion Imaging Interpretation
10. Ventricular Function Imaging
11. Myocardial Viability

### **ECHOCARDIOGRAPHY LECTURES:**

1. Normal Echocardiography and Training Requirements
2. Assessment of Ventricular Systolic Function
3. Assessment of Diastolic Dysfunction
4. Pericardial Disease
5. Coronary Artery Disease and Wall Motion
6. Hemodynamic Assessment and Doppler
7. Mitral Valve Stenosis
8. Mitral Valve Regurgitation

9. Aortic Valve Stenosis
10. Aortic Valve Regurgitation
11. Infectious Endocarditis
12. Prosthetic Valve Evaluation
13. Pericardial Effusion
14. Cardiac Tumors and Mass
15. Cardiomyopathy
16. Adult Congenital Heart Disease
17. Complex Congenital Heart Disease
18. TEE and Intraoperative TEE
19. Stress Echo
20. Echo Evaluation of Heart Failure
21. Echo Evaluation of LVAD
22. Echo Evaluation of Aortic Aneurysm
23. Echo Evaluation of Pulmonary Hypertension

### **Bibliography**

#### Research

Huth EJ; *How to Write and Publish Papers in the Medical Sciences*. 2<sup>nd</sup> ed. Philadelphia. Williams and Wilkins, 1990

Pocock SJ, *Clinical Trials*; New York; John Wiley and Susan, 1993

#### Nuclear/Stress Testing

Beller GA; *Clinical Nuclear Cardiology*, Philadelphia: WB Saunders, 1995

Ellestad MH. *Stress Testing: Principles and Practice*. 4<sup>th</sup> ed. Philadelphia: F.A. Davis Company, 1996

Gibbons R, Balady G, Beasley J, Bricker J. *ACC/AHA Guidelines for Exercise Testing: Executive Summar. A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines*. *Circulation*. 1997; 96: 345-354

### Case Studies

Willerson JT, Cohn J. *Cardiovascular Medicine*. 1<sup>st</sup> ed. New York, NY: Churchill-Livingston: 1995

Alexander WR, Schlant Robert C, Fuster Valentine, O'Rourke Robert A, Roberts Robert, Sonneneblick Edmund H. *Hurst's The Heart, Arteries and Veins*. 8<sup>th</sup> ed. New York: McGraw-Hill, 1998

Braunwald E. *Heart Disease: A Textbook of Cardiovascular Medicine*. 5<sup>th</sup> ed. Philadelphia; WB Saunders, 1997

### Echo

Feigenbaum H.; *Echocardiography*. 5<sup>th</sup> ed. Baltimore: Williams and Wilkins, 1993

Oh JK, Seward James B, Tajik A, Jamil. *The Echo Manual: From the Mayo Clinic*. 1<sup>st</sup> ed. Boston: Little Brown, 1994

Roelandt JRT, Pandian Natesa G; *Multiplane Transesophageal Echocardiography*. New York: Churchill Livingstone, 1996

Cheitlin M, Alpert J, Armstrong W, Aurigemma G. *ACC/AHA Guidelines for the Clinical Application of Echocardiography, A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines* (Committee on Clinical Application of Echocardiography). Developed in Collaboration with the American Society of Echocardiography. *Circulation*. 1997; 95: 1686-1744

### EKG:

Chou TC, Knilans Timothy K. *Electrocardiography in Clinical Practice: Adult and Pediatric*. 4<sup>th</sup> ed. Philadelphia: WB Saunders Company, 1996

## **Cardiology Board Review**

### **Director, Francisco Fuentes, MD**

#### **GOALS:**

Review all chapters of the Mayo Cardiology Board Review Book. Prepare for Board examination in cardiovascular medicine.



