

**Multi-modality Noninvasive Imaging Elective
Miriam Hospital**

Overview of Elective

Revision Date: 1/2/07

I. GENERAL INFORMATION	
Name of Elective	Multi-modality Non-Invasive Imaging
Director	Peter Tilkemeier, MD
Duration of Rotation	2-4 weeks
Location	Miriam Hospital
Administrative/Secretarial Contact & Phone	Janice Goulart 793-4107
Location to report on first day of rotation	Dr. Tilkemeier's office, Rm 341
Resident Study/Resource Area	Cardiology fellows room

II. FACULTY	
Peter Tilkemeier, Al Parisi, Gary Katzman, Tom Crain, Harry Schwartz, Albert Weyman, Mike Atalay	
Lines of Responsibility (in order): In all clinical in-patient rotations, cardiology fellows will interact with generalists and specialists in all areas, functioning as consultants for cardiovascular problems. Particularly close interactions are fostered with cardiothoracic surgery and internal medicine residents and staff. Primary care of such patients remains with the surgical or medical services, with the cardiology staff available for any level of consultation at any time. At any time, a given in-patient service thus may be comprised of an attending, a cardiology fellow, medical residents, and medical students. The team is led by the attending, who bears final responsibility for patient management or recommendations for management. The cardiology fellow is next in line, followed by medical residents and medical students, if present on the rotation.	

III. GENERAL GOALS AND EDUCATIONAL OBJECTIVES FOR THIS ROTATION	
General Goals: The goal of the rotation is to better understand the role of no-invasive testing in the modern day management of cardiovascular disease. The interaction and integration between multiple imaging modalities will be critically evaluated. The fellow will have the opportunity to interact with multiple specialists with expertise in various areas of non-invasive cardiology.	
Objectives: During the rotation the fellow will participate in the acquisition, interpretation and reporting of various non-invasive imaging modalities including echocardiography (TTE, TEE and exercise), nuclear cardiology, non-invasive vascular testing, MRI and CTA. The fellow will understand the complementary nature of the modalities as well the specific strengths and weaknesses of all the modalities.	

IV. TOPICS/TEACHING METHODS/MATERIALS USED DURING THIS ROTATION	
Specific topics to be covered during this rotation: During the rotation the fellow will: <ol style="list-style-type: none"> 1. Understand the indications/contra-indications for the use of each of the testing modalities. 2. Apply the current guideline statements for each of the testing modalities when evaluating patients for answering inquiries regarding a specific test. 3. Work toward acquisition of the necessary skills to become a qualified independent interpreter according to ACCCOCATS training guidelines for each of the modalities. 4. Understand the clinical limitations for each of the modalities 5. Interpret and generate clear and concise reports that convey the required information for both verbal and written reports. Understand the importance of certain results and communicating them effectively in an appropriate time frame given the severity of the result. 	

6. Learn how to acquire and process studies for interpretation in each of the modalities.
7. Build on existing knowledge regarding the safe use of radiation in diagnostic testing.

Principal teaching methods (see section IX):

- Clinical teaching (A)
- Clinical experiences (B)
- Performance feedback
 - Monthly evaluations (C1)
 - Semiannual evaluations (C2)
- Conferences (nuclear conference) (D)
- Optional: Projects (E)

Educational materials provided/referred to the resident: A variety of text and electronic media area available in the cardiology fellow's room as well as in each of the labs.

V. EVALUATIONS

A. Evaluation of the resident's successful completion of the above goals will be carried out by the attending physicians (see section IX). Assessment methods may include:

- Clinical performance ratings: Rotation evaluations (1A), semiannual evaluations (1B)
- Focused observation and evaluation (2)
- Faculty/staff meetings (4)
- Procedure logs (5)
- Project reports (portfolio) (6)

B. Residents will evaluate the rotation annually.

VI. RESPONSIBILITY OF ATTENDING ON ROTATION

The attending on the rotation will be responsible for the final interpretation of all studies. The attending will review all of the studies performed that day with the fellow. Educational points of each study will be reviewed with an emphasis on evidence-based medicine regarding indications for, utilization and interpretation of and clinical application of the results in patient management. For senior level fellows the attending will supervise the fellow's in the day-to-day administration of the laboratories activities.

VII. RESPONSIBILITY OF RESIDENT ON ROTATION

The fellow/resident will be responsible for

1. Observe isotope preparation, dose (or dye) administration, image acquisition, and image processing for 5 studies. For level 2 or 3 training, the minimum number of procedures should be performed according to current ACC COCATS guidelines for the nuclear portion of the rotation. This will be coordinated with the Chief Nuclear Medicine Technologist.
2. Perform stress testing according to schedule determined at beginning of month, coordinated with nursing staff for both the echo and nuclear laboratories.
3. When needed, screen studies for appropriateness, communicate with referring physicians, and answer questions from clinicians about any aspect of the study for all studies that the fellow participates in.
4. Prepare daily studies for reading, according to the attending schedule.
5. Review all studies, before attending review if possible, and formulate an initial summary of findings and conclusions.
6. Obtain correlation with other imaging studies.
7. Estimate number of studies read at end of each rotation and record in procedure log.
8. Senior fellows participating in this rotation will have greater clinical responsibility based on their level of training.

9. Fellows will participate in all TEE's as appropriate –including screening for appropriateness of the study, indications for the study, patient preparation including consent.
10. The fellow's schedule will be as follows:

	<u>Mon</u>	<u>Tues</u>	<u>Wed</u>	<u>Thurs</u>	<u>Fri</u>
8-11AM	TEEs early AM, echo and /Stress Echo			CT/MR	echo
1-3PM	PV	PV	PV	CT/MR	PV
4-5PM	Nuc	Nuc	Nuc	Nuc	Nuc

VIII. CONFERENCE AND CLINIC SCHEDULE SPECIFIC TO THIS ROTATION

	Monday	Tuesday	Wednesday	Thursday	Friday
AM				Cath conference	
PM	Parisi - noon		Journal Club (noon)		

IX. CORE COMPETENCY CURRICULUM

Competency Category	Specific Goals	Teaching & Assessment (sections IV, V above)
Medical Knowledge	Demonstration of investigatory and analytical thinking relevant to the clinical rotation	A,B,C,D -- 1,2,4,5,6A
	Acquisition the appropriate background relevant to specific rotations	B,C -- 1,2
	Application of basic and population science to practice	A,B,C,D -- 1,2,6A
Patient Care	Obtains appropriate information concerning the patient (history, past medical records, examination)	B,C -- 1,2,4
	Knowledge of the appropriate indications for diagnostic and therapeutic cardiology procedures	A,B,C -- 1,2,4
	Understands utilization of information technology as it relates to clinical care of patients	B,C -- 1,2
	Procedures: ECG, Holter	B,D -- 2
Practice-Based Learning & Improvement	Procedures: Stress testing (level 1)	B -- 2,5
	Procedures: Echocardiography or Nuclear Imaging (level 1)	A,B,C -- 1,2,4,5
	Demonstration of self-critical thinking and motivation to improve	B,C -- 1,2,4
Professionalism	Commitment to professional responsibilities and ethics	B,C -- 1,2,4
	Commitment to ongoing professional development	B,C -- 1,2,4