Rotational Cardiovascular Imaging Guideline

Educational Purpose of the Rotation

The Cardiovascular Imaging rotation provides the Sub-specialty residents with experience in a combination of imaging modalities. This rotation occurs at Michigan State University, Sparrow Health System and Mclaren Greater Lansing. These specifically include nuclear cardiology, CT and PET scanning, which is readily available and accepted as well as cardiac MRI which is still under development at this time. Sub-specialty residents assigned to this rotation are provided with more than adequate experience in reading nuclear scans, administration of radiopharmaceutical doses, working with the nuclear technologist to prepare and calibrate the equipment and patient supervision (approximately 500-600 hours). In addition, Sub-specialty residents are permitted time away from the program to participate in an intensive didactic nuclear training program. Completion of this program (200 hours) provides the Sub-specialty residents with the necessary requirements to sit for the Nuclear Boards. Sub-specialty residents also gain experience in CT coronary angiography.

Rotation Attendings

George Abela MD
Appa Bandi MD
Thomas Brown DO
Mark Castellani MD
Nam Cho DO
Joel Cohn MD
Christopher D'Haem
Gaurav Dhar MD
Carlos Fernandez DO
Ibrahim Shah MD
Majid Mughal MD
Edward Helble DO
Todd Hickox DO
John Ip MD
Michael James DO
George Kleiber DO
Kirk Laman DO
Dale Leffler DO
Chad Link DO
Daryl Melvin MD
Mohan Madala MD
Richard Pinke DO
David Rhine MD
James Schafer MD
David Strobl DO
Joni Summit DO
Ranjan Thakur MD
Ronald Voice MD
Mathew Wilcox DO
Peter Yoo MD
Omar Bakr MD

One Sub-specialty Resident is assigned to this rotation at one time. This is a required rotation and residents must complete at least 3-4 rotations during the three year training program.

Resources

All facilities currently house several nuclear imaging cameras, which are state of the art. It should be noted that Sub-specialty residents also garner experience in the administration of nuclear material while on this rotation as well as on the Non-Invasive Rotation when materials are administered during stress testing.

Both of these sites provide a significant patient population with a mix of pathologies. In addition, Sub-specialty residents are given the opportunity to work in the preventative medicine domain through the coronary calcium scoring via CT scanning. Patients include both gender groups as well as individuals of a broad spectrum of ethnic, racial and socioeconomic backgrounds. Extensive reading time provides residents with the opportunity to clearly define reversible vs. fixed defects, cardiac hemodynamics, administration and pharmacology of tracer agents utilized in nuclear imaging.

The didactic program provides Sub-specialty residents with certification in the following four basic areas of nuclear medicine:

1. Principles of Radiation Physics
2. Medical Radiation Protection
3. Medical Radiation Instrumentation
4. Radiopharmaceuticals and Chemistry

Completion of this coursework (200 hours) along with the clinical experience permits the Sub- specialty resident to apply for permission to sit for the Nuclear Medicine Boards. McLaren Greater Lansing, Sparrow Health System also houses a 64 Slice CT Scanner. Under the guidance of Dr. Wilcox and Dr. Voice, the fellows gain exposure to CT coronary and peripheral angiography. The Sub-specialty residents are taught the indications for an angiography, the timing of the contract administration and base anatomy of the vascular system.

Rotational Cardiovascular Imaging Guideline

Responsibilities

The expectations and responsibilities of this rotation apply to all sub-specialty residents (this is a required rotation).

1. Participate in cardiovascular testing as related to cardiology imaging modalities.
2. Obtain the appropriate information from the medical record and the patient history prior to testing to determine indications for testing, safety of the requested test and possible outcome.
3. Work effectively and actively participate with all members of the team including the Nuclear technologist to prepare, calibrate and administrate the radiopharmaceutical doses either alone or in combination with treadmill, bicycle or pharmacologic stress testing.
4. Have a working knowledge of the risks and contraindications for nuclear testing including knowledge of testing end points.
5. Have a working knowledge of the requirements for CT, MRI and PET scanning including indications/contraindications and appropriateness of testing.

Objectives

By the conclusion of the training program the sub-specialty resident will have completed two-to four rotations in cardiovascular imaging. The sub-specialty resident will:

1. Demonstrate a proficiency and working knowledge of nuclear imaging specifications including the preparation, calibration and administration of radiopharmaceutical doses.
2. Demonstrate an increased knowledge in the indications for specific cardiac imaging by indicating the appropriate study (nuclear, MRI, CT, PET) for the pathology under review (for example myocardial viability).
3. Demonstrate proficiency in interpretation and dictation (under the direction of the attending physician) of radionuclide studies including angiographic and hemodynamic data.
4. Demonstrate an increased proficiency in calcium scoring via CT scan and in developing a treatment/care plan dependent upon those results (further testing, risk factor modification, or continued follow up care).
5. Demonstrate the ability to appropriately refer, recommend and know the contraindications of cardiac imaging.
6. Demonstrate the ability to acquire relevant/pertinent patient data critical to testing outcomes prior to initiating testing.
7. Recognize abnormal testing results and act accordingly.
8. Demonstrates understanding of indications for CT angiography normal and abnormal anatomy of vasculature and atheroscloritic disease.

Instructional Methods

Attending physicians participating in this rotation will

1. Supervise and instruct the sub-specialty residents in accordance with the Supervision policy.
2. Provide an atmosphere allowing for responsible patient care while encouraging sub-specialty residents to assume more primary responsibility as their skills progress.
3. Provide sub-specialty residents with ongoing feedback regarding the progression of skills.
4. Provide structured teaching opportunities including appropriate literature references/citations for review and discussion.

Evaluation Process

At the conclusion of each rotation:

1. Attending physicians will summarize and accurately describe the subspecialty resident's performance on the provided evaluation form. The attending physician will review this evaluation with the sub-specialty resident and both will sign their acknowledgment and return the form to the Program Office for review by the Program Director and inclusion in the file.
2. The sub-specialty resident will summarize and accurately describe both the faculty performance as well as the relative value of the rotation on the provided form and return it to the Program Office. In order to insure anonymity, these comments are entered into a database program and the original forms are destroyed.

Additional Information: Other cardiac imaging modalities including PET with onsite cyclotron, MRI and CT scanning that are housed at Michigan State University in the Clinical Center. State of the art MRI scanners are used for cardiac imaging studies.
Readings: As assigned.
Schedule: Please refer to master sub-specialty resident schedule.
Competency Level: Completion of the Cardiac Imaging rotation would permit the Sub-Specialty Resident to qualify for Level 2 competency under COCATS3 Guidelines.