University of Wisconsin – Madison  
Cardiovascular Medicine Fellowship Program  
Nuclear Cardiology  
Goals and Objectives

I. General Overview

Cardiovascular imaging, and for the purpose of this rotation, Nuclear Medicine, have been evolving very rapidly over the past 3 decades. The indications for testing, types of protocols, stress agents utilized, relationship to other diagnostic modalities within cardiovascular medicine, and interpretation and implication of results are constantly changing along with the rapid advance in available commercial imaging equipment and new radiopharmaceuticals. Multi-gated nuclear angiography is commonly used for resting left ventricular function measurements at rest, particularly before oncology therapy, but rarely is used at exercise to diagnose ischemic cardiomyopathy, and typically also comprises less than 5% of all examinations performed. Planar myocardial perfusion imaging is used only as a last resort when single photon emission computerized tomography (SPECT) is unable to be performed, and multiple protocols are available at present to determine various degrees of myocardial perfusion, in addition to evaluation of left ventricular function and viability. Positron emission tomography (PET) is now more commonly available for the evaluation of the metabolic function of the heart, and as the ability to merge various digital imaging modalities (fusion imaging) is already present, it is expected to relate various nuclear medicine examinations with other forms of computed tomography. The vast majority of testing you will be exposed to at this time will be SPECT imaging. Myocardial perfusion (MPI), a subset of SPECT imaging, can be utilized in many ways: to evaluate a symptom (i.e. chest pain); prognosticate risk of current myocardial blood flow/stenosis; assess a patient’s risk of peri-operative ischemic risk; or help localize a “culprit stenosis” in patients with symptoms and known history of multi-vessel CAD, to mention a few. MPI as a physiologic exam is also a powerful modality in conjunction with anatomic testing (i.e. cardiac CTA) and invasive angiogram, especially in patients with borderline lesions on angiogram.

The performance and interpretation of cardiovascular nuclear medicine procedures involves the administration of intravenous radiopharmaceuticals which are strictly controlled by national and state regulations. A fellowship program must take into account the licensing regulations.

**Time away:** If you are going to be absent from the Nuclear Lab during your scheduled rotation, it is your responsibility send advance notification to Mary Zasadil (mlz@medicine.wisc.edu) with cc: to Meredith Albrecht (MAlbrecht@uwhealth.org) and Gordon Winder (GWinder@uwhealth.org). In addition, you must alert the CCU fellow who will provide back-up during your absence.

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**Training Requirements:**

- **Level I** – 2 months; total number of examinations: 100 (a minimum of 35 cases with hands-on experience must be performed and interpreted under supervision)
- **Level II** – 4-6 months; total number of examinations: 300; experience in computer methods for analysis. This should include perfusion and functional data derived from thallium or technetium agents and ejection fraction and regional wall motion measurements from radionuclide angiographic studies.

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<tr>
<th>Competency</th>
<th>Required Skill – Level I</th>
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| **Patient Care**            | ▪ Ability to tailor the proper form of stress testing to the individual patient  
▪ Understand the patient’s problems and expectations as they are tested  
▪ Understand various nuclear cardiology examinations and how they influence and affect patient care  
▪ Participate in 35 stress ECG’s under guidance of EP or RN. You will need to complete 35 cases in exercise lab within the first week, if able |
| **Medical Knowledge**       | ▪ Understand stress testing procedure, including multiple forms of treadmill and bicycle protocols, multiple forms of pharmaceutical stress tests and combinations of these tests  
▪ Understand potentials and limitations of the technique and indications/contraindications for each technique  
▪ Understand the role of various protocols of stress electrocardiography and nuclear cardiology in the clinical decision making process  
▪ Understand basic concepts of nuclear cardiology testing  
▪ Perform accurate clinical readings of the data to correlate with the anatomy and pathology, or lack of pathology, delineated by the nuclear examination  
▪ **Prepare 1 case/week for correlations with the cardiac catheterization laboratory in formal weekly combined nuclear cardiology/nuclear medicine/radiology departmental conferences** |
| **Interpersonal Communication Skills** | ▪ Knowledge of the standardized procedure reporting concept, as well as communicating the results of the exam to the requesting provider  
▪ Reporting on PowerScribe. **Prior to your rotation, obtain a Powerscribe sign-on and password. Call the Powerscribe help desk at (608)261-1808; tell them you are a new fellow in nuc med and need access**  
▪ Entering stress ECG in MUSE. **Confirm your MUSE access before starting your rotation** |
The fellow is expected to learn and understand the various ways to communicate the information generated by the nuclear cardiology examinations so that it is clinically relevant and understandable to all physicians concerned.

| Systems-based Practice | Learn the overall role of nuclear cardiology in the evaluation of the patient suspected of having cardiovascular disease, as well as its unique contribution to health care.
| Understand the role of various protocols of stress electrocardiography and nuclear cardiology in the clinical decision making process.
| Participate in on-going quality improvement efforts. |

| Professionalism | Maintain objectivity in interpreting the results of the examinations of the laboratory while maintaining a caring and sensitive persona to the needs of the patient experiencing the nuclear and stress examinations.
| Demonstrate compassion and offer treatment for the patient’s discomfort and be able to interact with the patient to prevent distress.
| Demonstrate ethical behavior and correct unethical behavior when observed.
| With abnormal studies you may need to speak with patients to delineate the stability of symptoms and participate in the decision to keep the patient. |

| Practice based learning and improvement | Retrospective review of fellow cases (including regular non-imaging treadmill and perfusion studies) in reference to case outcomes and decision making.
| Random case review of patient studies from the perspective of hard outcomes (myocardial infarction or death) to determine impact of stress testing on patient management. |

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<th>Level II Competency</th>
<th>Required Skill</th>
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| Patient Care | Conduction and administration of stress testing.
| Obtaining informed consent on occasion.
| Answering patient questions regarding the examinations.
| Treating the complications arising from the stress electrocardiographic (both treadmill and chemical) and nuclear examinations.
| Continue to improve the evaluation of nuclear cardiology results in relation to clinical findings of the patient and the various factors of the clinical situation contributing to the nuclear cardiology results.
| Gain comprehensive knowledge of attenuation correction—when it should, and when it should, not be utilized.
<p>| Gain comprehensive knowledge of how to post process. |</p>
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<tr>
<th>Imaging</th>
<th>Medical Knowledge</th>
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<tbody>
<tr>
<td>Exposure to the performance and interpretation of PET imaging in the evaluation of patients with suspected hibernating (and not scarred) myocardium</td>
<td>Optimize the performance and quality of examinations</td>
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<td>Relate the acquisition of data to the clinical questions asked in referring the patient</td>
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<td>Understand the relationships between the different causal-related results of the nuclear cardiology laboratory findings and the reason for referring the patient for nuclear cardiology examination</td>
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<td>Faculty-based over-reading of the fellow interpretations is to concentrate on the technical precision and performance of a result as it relates to the clinical status of a patient</td>
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<td>Improve the refinement of a diagnosis during a nuclear cardiology procedure</td>
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<td>Learn the relationships between image and data processing and various disease states</td>
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<td>Knowledge in Positron Emission Tomography processing and interpretation</td>
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<td>Understand the different patterns of prograde nuclear angiography as it applies to cardiomyopathies and intracardiac shunt quantification</td>
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<td>Understand the potential of PET to assist in the evaluation of chronic ischemic cardiomyopathy</td>
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<th>Interpersonal and Communication Skills</th>
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<td>Discuss the results of testing with the patient and referring physician, including limitations and advantages to the exam</td>
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<td>Relate limitations and advantages to continuation of patient care</td>
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<td>Understand the prognostic implications of the nuclear cardiology results and communicate this aspect of the results in addition to the anatomical and physiological findings</td>
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<td>Ability to communicate the implications of a nuclear cardiology laboratory result to the patient and medical provider</td>
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<td>Ability to explain in clear, concise language the reliability and degree of accuracy of the technical results and relate these factors to the clinical questions involving the patient with his medical providers</td>
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<td>Communicate PET results</td>
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<td>Ability to integrate the results of specialized procedures with other routine examinations in order to allow the patient and referring MD to better understand the patient’s</td>
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<td>Chapter 1: Cardiovascular Status</td>
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| **Systems-based Practice**       | ▪ Study the cost-based structures of stress testing as it relates to other modes and techniques of cardiovascular examination  
▪ Understand the position and role of nuclear cardiology from a systems-based approach in providing patients with cardiovascular care  
▪ Understanding of the overall role of nuclear cardiology examination results in the role of long term medical management  
▪ Understand the role of nuclear cardiology in providing accurate and appropriate data for clinical management in cardiovascular disease  
▪ Integrate a knowledge base derived from examinations performed in nuclear cardiology laboratory to evaluate cardiovascular health status with other technical examinations of cardiovascular status  
▪ Integrate knowledge of the proper place and perspective of the nuclear cardiology examinations with those of the history and physical exam, electrocardiographic, echocardiographic and cardiac catheterization laboratories, and computerized tomography and MRI laboratories  |
| **Professionalism**              | ▪ Appropriately interact with other teams involved with the patient’s care  
▪ Lessen the patient’s suffering while developing a united approach to all of the patient’s complaints and medical problems  
▪ Continued development of response to the needs of patient and society  
▪ Demonstrated competency in compassionate recognition a patient’s complaints and needs  
▪ Initiate action to reduce patient suffering  
▪ Integrate knowledge of advanced and/or rarely performed nuclear cardiology techniques into a proper perspective of finding the most appropriate diagnostic test and balance the need for such an exam with the suffering it may cause the patient  
▪ Understanding and knowledge of how to explain the consequences of nuclear examinations performed to both the patient and other teams involved in the patient’s care  |
| **Practice-based learning and improvement** | ▪ Continue to improve skills in interpretation  
▪ Organize weekly cardiac catheterization/coronary angiography conference to relate anatomical data to the data generated in the nuclear cardiology laboratory  |

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II. Nuclear Cardiology Rotations and Goals

The cardiovascular fellowship nuclear medicine training program is designed to offer the fellow the fundamental and basic knowledge to achieve the following objectives:

1. Comprehensive knowledge of the indications and contraindications for each type of examination in conformance with federal law governing the administration of a radiopharmaceutical and the necessary precautions in safety for those affected by the administration of the radiopharmaceutical.
2. A demonstrated skill in the performance of various types of chemical and exercise stress testing.
3. Knowledge of skill to acquire examinations; understanding variables, such as the patient’s ability to lie still and flat for 15 minutes, that would render a superior or sub-standard exam.
4. A demonstrated skill in computer processing of all techniques across the multiple equipment platforms available using similar interactive software.
5. A comprehensive knowledge and demonstrated skill in the interpretation of cardiovascular nuclear medicine procedures with a demonstrated program of quality control.
6. A demonstrated skill to relate the results of the examinations to the clinical indications for the examination and the overall pertinence to the clinical condition of the patient.
7. A demonstrated skill to communicate the results to the patient and to the referring physician as needed, particularly in abnormal studies. Ability to determine which patients will be required to be admitted directly from the nuclear lab.
III. Current Procedures Performed in Cardiovascular Nuclear Medicine

1. Exercise and chemical stress electrocardiography
   Dobutamine or regadenoson testing, in addition to treadmill or bicycle stress testing, are used as an integral part of cardiovascular nuclear medicine imaging; exercise and regadenoson comprise the majority of testing performed. Competency is required in all the variations of stress.

2. Myocardial perfusion imaging
   This procedure is the most commonly used procedure but has multiple variations including: planar imaging (rarely), SPECT imaging, gated SPECT imaging and PET imaging. There are multiple quality control issues in the acquisition of these clinical studies. Thus the prospective specialist must learn all aspects to the quality control issue of acquisition before attempting to define normalcy, and then understand the limitations in defining normalcy for individual patients. The major goals throughout the cardiovascular nuclear medicine rotations are to emphasize indications/contraindication of exercise, dobutamine and regadenoson testing. Ability to evaluate a case and suggest the appropriate modality even if that modality is not nuclear.

3. Multigated nuclear angiography (MUGA)
   MUGA is used to evaluate right and left ventricular function and can be performed in either 2 dimensional or 3 dimensional (tomographic) technique.

4. PET imaging
   This technique is able to analyze myocardial perfusion, myocardial metabolic function (including myocardial viability) and ventricular function, with the ability to significantly extend absolute quantification of measurements.

IV. Cardiovascular Nuclear Medicine Teaching Program

Cardiovascular nuclear medicine, like multiple other areas within cardiology, is defined by COCATS with 2 significant established levels of competency for those who wish to pursue the utilization of the techniques in their practice of medicine, and a basic level of education for all cardiovascular disease section fellows. The definitions of the formal courses, to be given to all fellows on a yearly basis, are at the end of this document. In addition to the formal course of lectures by faculty, all fellows are required to have training in radiation safety and radiopharmaceutical handling in their first year of fellowship. The six core competencies of the ACGME including patient care, medical knowledge, practice-based learning and improvement, interpersonal communication skills, professionalism, and system-based practice knowledge are to be taught and monitored through the 6 month rotations of the formal years of fellowship training and monitored by 1:1 documented faculty-fellow daily teaching in the cardiovascular nuclear medicine departments (2 sites including the University of Wisconsin Hospital on campus and the University of Wisconsin Medical Foundation Cardiology Clinic at the Meriter Atrium, with 5 different types of imaging devices and 3 processing platforms). Teaching experience is to be strictly documented.

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Listed below are goals for the nuclear cardiology rotation throughout the monthly rotations, to include the six core competencies of fellowship education as specified by ACGME.

Month 1 – Stress Laboratory, Nuclear Cardiology Rotation

The initial goal of the first month is to introduce the fellow to all manners of stress testing, to include the multiple forms of treadmill and bicycle protocols, the multiple forms of pharmaceutical stress tests, and combinations of all of the previous. The fellow is to gain knowledge of the potentials and limitations of the technique, the indications for each technique, and understanding of the patient’s problems and expectations as they are tested. The fellow is expected to know how to tailor the proper form of stress testing to the individual patient requirements and clinical question leading to the referral for testing. The fellow is also expected to learn the basic aspects of nuclear cardiology testing, with constant observation and work review by the attending nuclear cardiology and nuclear medicine physicians. All cases of both electrocardiogram and nuclear testing are to be subject to daily reviews by staff and fellow.

Interpersonal communication skills are to be developed by learning the role of various protocols of stress electrocardiography and nuclear cardiology in the clinical decision making process. The fellow is to learn the standardized procedure reporting concept, as well as to communicate the results of the examinations to the providers requesting the examinations.

The fellow is expected to start the process of learning the professional interaction process with the various members of the nuclear cardiology laboratory, including the nuclear pharmacy technicians, the nuclear medicine technicians, the exercise physiologists, and other members associated with the team, including quality assurance technicians.

Month 2 – Stress laboratory, Nuclear Cardiology Rotation

The expected goal of this rotation is to learn basic and advanced computer processing techniques of nuclear cardiology in addition to continuing the same goals listed for the first month of training. There are multiple computer processing programs used in the performance of nuclear imaging to derive results. The programs require direct physician involvement, and thus, constant supervision is to be given to the fellow in this rotation to demonstrate the various processing tools with direct hands-on experimentation and experience. Since a major part of the learning experience is to recognize artifact from actual finding of anatomy or physiology, multiple sessions of faculty teaching are to be directed at the fellow to understand the subject of nuclear examination artifact and possible solutions to derive accurate findings to drive the decision making process. Formal lectures are to be given on the subject in addition to the practical experience.

Medical knowledge. Medical knowledge to be acquired in this month is to focus on accurate clinical readings of the data to correlate with the anatomy and pathology or lack of pathology delineated by the nuclear examination. The fellow is expected to prepare cases for correlation with the cardiac catheterization laboratory in formal weekly combined nuclear cardiology/nuclear medicine/radiology departmental conferences.

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Patient-based learning. The fellow is to focus on interpretation skills of the various nuclear cardiology examinations and to how they influence and affect patient care.

Interpersonal communication skills. There are multiple paths that are accepted as standard to generate reports from the nuclear cardiology laboratory. The paths chosen may be different when the fellow is reading with a predominantly nuclear medicine (Department of Radiology) physician versus those reports generated by a predominantly cardiovascular disease section physician. The fellow is expected to learn and understand the various ways to communicate the information generated by the nuclear cardiology examinations so that it is compatible with and acceptable to all physicians concerned.

Systems-based practice. The fellow will learn overall role of nuclear cardiology in the evaluation of the patient suspected of having cardiovascular disease as well as its unique contribution to health care.

Month 3 – Nuclear Cardiology Rotation
The major goals of month 3 are to learn the principles of quality control in the nuclear cardiology lab and to continue to gain experience in the interpretation of the standard tests. In particular, the fellow is expected to gain knowledge in the preparation and handling of radiopharmaceuticals, the delivery and safe administration of radiopharmaceuticals, radiation safety, and the proper techniques used in disposing of radiopharmaceutical waste.

Patient care. Patient care goals are to continue to focus on the conduction and administration of stress testing, obtaining the informed consent, answering patient questions regarding the examinations, and treating the complications arising from the stress electrocardiographic (both treadmill and chemical) and nuclear examinations.

Medical knowledge. The fellow is to continue to acquire knowledge to optimize the performance and quality of examinations and relate the acquisition of data to the clinical questions asked in referring the patient.

Practice-based learning and improvement. By continuing to have all examinations reviewed by faculty staff, the fellow is expected to improve his skills in interpretation. The fellow is expected to continue to organize a weekly cardiac catheterization/coronary angiography conference to relate anatomical data to the data generated in the nuclear cardiology laboratory.

Interpersonal communication skills. The fellow is to continue learning how to discuss the results of the testing with the patient and his referring physicians. Discussion of results is to include limitations of examinations in addition to their advantages, and to relate these limitations and advantages to continuation of patient care.

Systems-based practice. The fellow is to study the cost–based structures of stress testing as it relates to other modes and techniques of cardiovascular examination. This is to

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allow a better understanding of the position and role of nuclear cardiology from a systems-based approach in providing patients with cardiovascular care.

**Month 4 – Nuclear Cardiology Rotation**

The major goals of this rotation are to continue to acquire the clinical skills in the interpretation of nuclear cardiology results.

*Patient care.* The fellow is to continue to focus on improving the evaluation of nuclear cardiology results in relation to the clinical findings of the patient and the various factors of the clinical situation contributing to the nuclear cardiology results.

*Medical knowledge.* Multiple disease entities and clinical situations are known to contribute and interfere with the findings of nuclear cardiology laboratory results. In this rotation the fellow is expected to find the relationships between the different causal-related results of the nuclear cardiology laboratory findings and the reason for referring the patient for the nuclear cardiology examination. Faculty-based over-reading of the fellow interpretations is to concentrate on the technical precision and performance of a result as it relates to the clinical status of a patient.

*Practice-based learning.* The emphasis of this rotation is on the technical limitations on performance and interpretation of nuclear cardiology results. The fellow is expected to be involved in the preparation of the patient before the examination, the administration of radiopharmaceutical, the conduction of the exercise protocol, and the initial processing technique leading to a nuclear cardiology result.

*Communication skills.* The fellow is to obtain technical skills to allow better evaluation of the validity and reliability of clinical results when communicating the results to the requesting provider of the nuclear cardiology examination, as well as discussing the implication of the results to the patient. The fellow will continue to learn the prognostic implications of the nuclear cardiology results, and to be able communicate this aspect of the results in addition to the anatomic and physiologic findings.

*Systems-based practice.* Since many of the examinations performed in the nuclear cardiology laboratory are associated with long term outcomes, particularly in ischemic heart disease, the fellow is expected to gain understanding on the overall role of nuclear cardiology examination results in the role of long term medical management.

**Month 5 – Nuclear Cardiology Rotation**

Major Goal: Focus on advanced computer processing technique.

*Patient care.* There are multiple computer processing packages available to interpret each type of nuclear cardiology examination. The fellow is to learn and understand each of the different commercial packages available to process an examination as it applies to the individual patient. He is to learn to adjust the program to the individual

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characteristics of the patient examined, in order to optimize clinical results and thus provide the patient with as much information as is possible.

*Medical knowledge.* The rotation is to focus on acquiring skills to improve the refinement of a diagnosis during a nuclear cardiology procedure. This requires the fellow to learn image smoothing processing technique, edge detection technique, and region of interest placement technique as they apply to both normal patients and patients with disease. The fellow is to learn the relationships between image and data processing and various disease states.

*Practice-based learning.* The fellow is to learn and use all of the image processing techniques in this rotation, applying them to all applicable patients. The fellow is to focus on the affects of the processing on the quantification of values obtained. There is a known variance and accuracy to the result of each processing technique, and through repetitive practice, the fellow is expected to increase his/her skill in understanding results.

*Communication skills.* During this month the fellow is to focus on communicating the implications of a nuclear cardiology laboratory result to the patient and requesting medical provider. The fellow is expected to gain knowledge in explaining the reliability and degree of accuracy of the technical results, and relate these factors to the clinical questions involving the patient with his medical providers.

*System-based practice.* The fellow is to understand the role of nuclear cardiology in providing accurate and appropriate data for clinical management in cardiovascular disease.

**Month 6 – Nuclear Cardiology Rotation**

Major Goal: Advanced nuclear cardiology procedures including first-pass nuclear angiography at rest and effort, congenital heart disease, intra-cardiac shunts, and positron emission tomography (PET).

*Patient care.* The fellow is to focus on various modalities of nuclear cardiology to examine patients suspected or known to have ventricular dysfunction or intra-cardiac shunts. The technique of first-pass nuclear angiography provides rapid non-invasive assessment of right and left ventricular function as well as assessment of chamber-to-chamber shunting. In patients in whom ventricular dysfunction is suspected, fellows are expected to acquire knowledge of the disease state by the injection of radiotracer by first-pass technique, even when the radiotracer study was initially ordered for only perfusion scanning. This is to allow a more complete diagnostic profile to be created for the patient. The fellow is expected to learn the contribution of first-pass nuclear angiography to quantify intra-cardiac shunts. Although not used for routine myocardial perfusion imaging at this institution, at other venues PET imaging is routinely used for myocardial perfusion imaging in patients with severe resting left ventricular dysfunction. The fellow is to be exposed to the

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performance and interpretation of PET imaging in the evaluation of patients with suspected hibernating (and not transmurally scarred) myocardium.

*Medical knowledge.* The fellow is to acquire knowledge in first-pass technique and Positron Emission Tomography processing and interpretation in this rotation. The fellow is expected to learn and understand the different patterns of prograde nuclear angiography as it applies to cardiomyopathies and intracardiac shunt quantification. The fellow is also expected to learn and understand the potential of Positron Emission Tomography to assist in the evaluation of chronic ischemic cardiomyopathy.

*Practice-based learning.* Since this month is based on learning new processing techniques, hands-on mentor/faculty teaching is to accompany all processing in addition to interpretation. Archived studies are to be used on a continual basis for teaching, in addition to those patients to be examined per new medical request during the rotation.

*Communication skills.* This month is to focus on the fellow developing effective skills to communicate the results of first-pass nuclear angiography and Positron Emission Tomography results. The fellow is to be able to integrate the results of these specialized procedures with the other routine examinations that have involved the patient, and thus allow the patient and referring physician to better understand the patient’s cardiovascular status.

*Systems-based practice.* The fellow is to integrate a knowledge base derived from the examinations performed in nuclear cardiology laboratory to evaluate cardiovascular health status with other technical examinations of cardiovascular status. This integration is to include finding the proper place and perspective of the nuclear cardiology examinations with those of the history and physical exam, electrocardiographic, echocardiographic, and cardiac catheterization laboratories, and Computerized Tomography and Magnetic Resonance Imaging laboratories.

Throughout the 6 months (and 3 years of fellowship in cardiovascular disease) of nuclear cardiology rotations, there are to be didactic lectures covering all aspects of nuclear medicine radiation safety, nuclear medicine physics, nuclear medicine mathematics, and image processing. Throughout the 3 years of cardiovascular disease fellowship, there are to be correlation conferences to relate nuclear cardiology laboratory findings to patients.
As discussed above, Nuclear Cardiology Rotations are in fulfillment of COCATS Levels I-III. Briefly, Level I is the development of a basic understanding of Nuclear Cardiology techniques and applications. Level II training fulfills NRC licensure requirements and is the minimum level of competency for interpretation of studies professionally. Level III training is advance training applicable for an academic career in nuclear cardiology, a research career or the directorship of a large nuclear cardiology laboratory. Each monthly rotation has goals specific for the level of training in nuclear cardiology. Educational experiences are specific to the ACGME six goals of residency training of 1). Patient Care, 2). Medical Knowledge, 3). Practice-Based Learning and Improvement, 4). Interpersonal and Communication, 5). Professionalism, and 6). Systems-Based Practice.

a. Number of months of training for each level is reflective of the COCATS guidelines. Level I training is mandatory for completion of cardiology fellowship and consists of 2-3 months. Level II training is 4-6 months while Level III training is 10-16 months. Each Level is sequential and inclusive, building on the previous months.

b. In addition to the clinical rotations, two separate didactic courses are given. A Nuclear Cardiology lecture series is held within the general fellowship didactic series of 22-24 lectures every two years. There is also a didactic lecture series for completion of NRC-mandated topics as described above which will be done on a two-year basis. A brief course is also given by the Safety Department on laboratory work which is mandatory for fellows prior to work in the radiopharmacy.

c. For continued review and image reading critique, monthly imaging sessions are held in conjunction with the weekly imaging conference for the fellowship.