NMMC Cardiovascular Fellowship | PGY5 Expectations

Cath Lab Rotation

1. Continue to build upon the goals and objective of PGY-4 year.
2. Gain more experience and mastery over complex interventional procedures and hemodynamic tracing.
3. Gain initial experience in interventional and structural cardiology and begin formal technical training specific to interventional and structural cardiology.

Non-Invasive

Echocardiology

1. Further develop the skills obtained in PGY 4.
2. Demonstrate competency in performing stress echocardiography, recognizing indications and contraindications and have skill in performing the stress portion of the test.
3. Demonstrate the ability to independently perform transthoracic echocardiograms of a diagnostic quality.
4. Demonstrate competency to independently perform conscious sedation for transesophageal studies, and competence in insertion of transesophageal probe, and performance of a complete transesophageal exam. This includes knowledge of the indications and contraindications of both conscious sedation and transesophageal echo.
5. To be able to participate in education of physicians on non-cardiovascular services, in regards to the uses, limitations and indications for all modalities of echocardiography.
6. To become competent in understanding the indications and contraindications for performing all modalities of echocardiography
7. Be able to obtain Level III competency in echocardiography according to the COCATS guidelines if desired

Stress Echocardiology

1. Continue to build upon the learning objectives in PGY-4 year.
2. Perform a minimum of 100 stress echo tests.

Stress Radionuclide Testing

1. Continue to build upon learning objectives in PGY-4 year.
2. Interpret at least a total of 300 nuclear cardiology studies, including correlation with cardiac catheterization, and assess the impact of the study on subsequent clinical management and develop at minimum at level 2 training in Nuclear Cardiology
3. Master the nuclear evaluation of patients with coronary artery disease, including reversible ischemia and myocardial viability.

Cardiac CT/MRI

1. Attend lectures on the basic concepts of cardiac CT and MR and conduct continued self-study reading material
2. To understand the basic types of cardiac CT and MR studies and their indications
3. To understand the basic physics of advanced cardiac imaging, radiation safety, the basics of scan performance, safety issues in performance, side effects (and their treatment) of medications used currently including beta blockers and nitrates, post-processing methods, and basics of interpretation as compared with other cardiovascular imaging modalities including echocardiography, nuclear cardiology, and invasive cardiac and vascular x-ray angiography
4. To understand the use of intravenous administration of iodinated contrast including contrast injection methods, adverse events and their treatments, and contrast kinetics
5. Actively participate in performance and image acquisition of cardiac CT and MR. Hands-on training is important to understand the distinction between reliable and unreliable data
6. To understand the sources of artifacts (breath-holding, gating, or arrhythmias) and how these affects image interpretation
7. Actively participate in cardiac CT and MR study interpretation. There should be mentored interpretation of at least 50 cases (and may include studies from an established teaching file or previous cardiac CT cases) to achieve level 1 certification
8. To integrate the information obtained from cardiac CR and MR studies with other diagnostic modalities in cardiovascular medicine including EKG, angiography, echocardiography, radionuclide imaging, and hemodynamics data
9. To establish a professional, working relationship with radiology faculty to help interpret non-cardiac findings
10. Communicate effectively the risk and benefits of the procedure to the patient
11. Provide professional presentation of imaging findings to patient and family members in a compassionate and informative manner with appreciation of cultural, spiritual and social context of wellness and illness. Provide complete and accurate report to consulting physicians and care teams
12. Understand and utilize the multidisciplinary resources necessary to perform advanced imaging studies and collaborate with other members of the health care team to assure comprehensive cardiac care.

Carotid Imaging

1. Continue to build upon PGY-4 goals and objective

Peripheral Arterial Vascular Imaging

1. Continue to build upon PGY-4 goals and objective

Venous Duplex Imaging

1. Continue to build upon PGY-4 goals and objective

Electrophysiology

1. Continue to build upon PGY-4 goals and objective.
2. Develop more expertise in regards to understanding the indications for diagnostic electrophysiology study, interpretation of intracardiac electrograms, evaluation of patient's with complex ventricular arrhythmias, trouble-shoot and program various types of devices, and understanding patient selection and indications for the need of an electrophysiology study and device implantation.
3. Further develop technical skills in the electrophysiology lab in regards to the insertion of devices, ablations, EP studies, pre and post procedural managements of patients, and complications related to procedures.

CHF

1. Demonstrate competency in the evaluation of cardiomyopathies.
2. Demonstrate competency in the guideline directed medical therapy of these cardiomyopathies.
3. Understand the pharmacology and drug interactions of CHF therapies.
4. Demonstrate competency in the performance and interpretations of cardiac catheterization procedures in the advanced heart failure population.
5. Demonstrate the knowledge of indications and contraindications for ventricular assist devices and thoracic organ transplantation.
6. Demonstrate knowledge of the management and potential complications related to ventricular assist devices, cardiac transplantation, other advanced heart failure therapy, and management of related complications.
7. Develop team leadership skills and be able to formulate a plan for the treatment of advanced heart failure patients, including end of life care.
8. Efficiently and effectively document in writing the observations, measurements, and conclusions, that will be entered into the medical record.
9. Demonstrate effective communication with consulting providers, and other physicians and supporting staff.
10. Effectively work in an interdisciplinary fashion for the evaluation and continued management of candidates and recipients of advanced heart failure therapies.
11. Develop outpatient skills in the evaluation and management of patients who are pre or post transplant/device therapies.

Cardiovascular Surgery Rotation

1. Perform preoperative evaluation, history and physical examination of cardiac/vascular surgery patients.
2. Conduct multi-disciplinary rounds with PAs/NPs/surgeons on inpatients.
3. Obtain and interpret indicated diagnostic studies.
4. Provide substantive care for patients in the CICU and Cardiac step-down units.
    - Coronary bypass surgery
    - Valve surgery
    - Thoracic aortic surgery
    - LVAD placement

5. Perform percutaneous insertion of chest tubes and intravenous, intra-arterial and pulmonary artery catheters with supervision.
6. Discuss diagnostic and therapeutic approaches to specific acquired and adult congenital cardiac diseases with the attending physicians
7. Assist with selected cardiac cases, such as:
    - Saphenous vein harvest and wound closure for coronary bypass operations
    - Valve and coronary operations
    - Pericardial drainage operations
    - AAA stent grafting
    - Carotid stenting
    - Minor vascular repairs

Individual Choice

1. This rotation can be decided by the fellow in conjunction with the Program Director to allow:
    a. Areas of needed extra focus as determined by the CCC
    b. Areas of interest as determined by the fellow
    c. Focused attention to cardiology research
    d. Distant learning opportunity