Interventional Cardiology Program Aims

1. Competency in the following areas of medical knowledge:
    a. Anatomy: Cardiac, vascular and coronary anatomy, including anatomic variants and congenital abnormalities
    b. Physiology: Basic circulatory physiology, coronary and peripheral vascular physiology, myocardial blood flow regulation, myocardial physiology and metabolism
    c. Vascular biology and pathology: Normal vascular structure and function, response to injury, mechanisms of atherosclerosis and mechanisms of restenosis
    d. Pathophysiology: Myocardial ischemia and infarction, myocardial reperfusion, circulatory shock, anaphylaxis and cardiac arrhythmias. Occlusive peripheral arterial disease, aortic dissection, penetrating aortic ulcers and intramural hematoma. Arteritis, vasospastic disorders, leg and foot ulcers. Carotid and renal artery stenosis
    e. Pharmacology: Anticoagulants, antiplatelet drugs, thrombolytic drugs, X-ray contrast agents, myocardial inotropes, vasopressors, vasodilators, antiarrhythmic drugs and drugs affecting lipid metabolism; Peripheral arterial thrombolysis
    f. Radiology imaging and radiation safety: Principles of X-ray imaging, quantitative coronary angiography, operation of cinefluorographic X-ray equipment, digital video imaging systems, radiation biology and radiation protection
    g. Intravascular imaging and vascular physiology: Principles of intravascular ultrasound imaging and Doppler coronary flow velocity measurements
    h. Non-invasive imaging: Interpretation and selection of appropriate non-invasive vascular imaging
    i. Interventional device design and performance: Device material and characteristics
    j. Clinical management strategies: Performance and limitations of interventional devices, spectrum of coronary ischemic syndromes and peripheral arterial disease, results of interventional cardiology trials, management of acute hemodynamic alterations and mechanical pharmacological circulatory support
    k. Complications of the procedure and their management: Hypotension, acute myocardial ischemia, congestive heart failure, renal failure, vascular complications, contrast reactions, retroperitoneal bleeding, and cardiac tamponade
    l. Complications of peripheral vascular interventions
2. Patient Care and Practice-Based Learning and Improvement:
    a. Patient care and direct practice-based learning occurs in the context of the initial evaluation of patients undergoing endovascular interventional procedures, in the cardiac catheterization laboratory suite, as well as post-procedurally. The nature of a trainee's participation in a case varies depending on the procedure's complexity and the trainee's experience.
    b. The trainee's goals are to demonstrate competence in the following: Pre-procedural evaluation to assess appropriateness and to plan procedure strategy; Personal performance of the case's critical manipulations under the direct supervision of a program faculty member. The faculty member who takes overall responsibility for the case must be immediately available to supervise the trainee's actions and to take over the performance of the case any time it is in the best interest of the patient; Active involvement in post-procedural management both in the catheterization laboratory at the conclusion of the case and in the inpatient unit or holding area afterward. This includes assessing for possible adverse outcomes, managing access sites and managing anticoagulation issues; Active involvement in procedure reporting and the process of ensuring quality; Maintenance of a portfolio of

novel and advanced interventional procedural techniques integrated with current available literature, to be used for presentation and review; Core procedure capability and technical skill acquired by the trainee: Conventional balloon coronary angioplasty, Coronary artery stents, Primary, angioplasty for acute myocardial infarction, Atherectomy techniques (laser, rotablator), Intravascular ultrasound, Intra-aortic balloon counter pulsation and other techniques of circulatory support, Cardiac valvuloplasty, TAVI Procedure (Transcatheter Aortic Valve Implantation), Endomyocardial biopsy, Transcatheter closure of congenital defects, Peripheral angiography, Peripheral artery thrombolysis, Percutaneous mechanical thrombectomy for arterial thrombus, Subclavian, brachiocephalic and upper extremity endovascular interventions, Renal artery/Aortic/ iliac/common femoral artery interventions, Endovascular treatment of superficial femoral artery disease, Infrapopliteal interventions.

3. Interpersonal and Communication Skills:
    a. Level 3 trainees assume progressive responsibilities for the conduct of the interventional procedure, as well as of the interactions with patients and their families across a broad range of socioeconomic and cultural backgrounds. They become more involved in the discussion of the results of the study with other medical providers, becoming capable of acting in a consultative role to referring primary care physicians and cardiologists, as well as to cardiothoracic and vascular surgeons.
4. Professionalism:
    a. The fellow further develops the concepts of professional behavior acquired during the core cardiology training and continues to interact with the multiple different types of providers in a large cardiac catheterization laboratory that include clerical staff, technicians, nurses, faculty, and other senior fellows. Formal conferences on professionalism are held regularly. The trainee will: • Demonstrate empathy, sensitivity and compassion as a physician, demonstrate high standards of ethical behavior, understand the ethical aspects of the relationship with industry, refine her/his understanding of the elements of patients' rights and confidentiality.
5. Systems Based Practice:
    a. The trainee further develops her/his appreciation of the role of the cardiac catheterization laboratory in a system of health care delivery, eventually understanding the role of the laboratory in the context of the needs of a large inpatient hospital system. They continue to gain deeper appreciation of procedural indications as well as of their cost effectiveness, as well as of diagnostic and procedural coding. During their training the fellows attend formal practice improvement conferences and engage in specific practice improvement projects. These include a cardiac catheterization laboratory quality improvement initiative with reporting to the American College of Cardiology National Cardiovascular Division.