CARDIOLOGY FACULTY

Full-time & Part-time Teaching Staff of the
Cardiovascular Division

- **Syed M. Mohiuddin, MD, DSc** – (Noninvasive) – Professor of Medicine and Pharmacy, Chairman of the Department of Medicine

- **Dennis J. Esterbrooks, MD** – (Noninvasive) – Professor of Medicine and Radiology, Division Chief of Cardiology, Director of The Cardiac Center, Medical Director of the Cardiac Rehabilitation Program, Medical Director of the Outpatient Clinic, Co-Medical Director of Cardiac Imaging

- **Hussain Abuisa, MD** - (Electrophysiologist) – Assistant Professor of Medicine

- **Kelley Airey, MD** - (Electrophysiologist) – Assistant Professor of Medicine

- **Amy J. Arouni, MD** – (Noninvasive) – Associate Professor of Medicine, Medical Director of Therapeutic Monitoring

- **W. Paul Biddle, MD** – (Invasive) – Associate Professor of Medicine, Medical Director of External Enhanced Counter Pulsation (EECP)

- **Michael G. Del Core, MD** – (Invasive) – Associate Professor of Medicine, Associate Director of The Cardiac Center, Medical Director of the Invasive Laboratory, Director of Interventional Fellowship Training Program and Interventional Research, Medical Director of Clinical Laboratory (CLIA), Clerkship Director for students for Cardiology

- **Tom T. Hee, MD** – (Electrophysiologist) – Professor of Medicine, Medical Director of Electrophysiology Laboratory and Device Clinic

- **M. Jeff Holmberg, MD, PhD** – (Noninvasive) – Associate Professor of Medicine, Medical Director of the Non-Invasive Laboratory

- **Claire B. Hunter, MD** – (Noninvasive) – Associate Professor of Medicine, Director of Cardiovascular Fellowship Training Program, Medical Director of Heart Improvement Therapy (HIT) Clinic, Medical Director of Academic Affairs

- **Nazih N. Kadri, MD** – (Electrophysiologist) – Adjunct Professor of Medicine – Medical Director of Cardiac Monitoring and EKG Services (CMES)

- **Thomas J. Lanspa, MD** – (Invasive) – Associate Professor of Medicine, Medical Director of Vascular Imaging

- **Joseph D. Lynch, MD** – (Noninvasive) – Associate Professor of Medicine, Medical Director for Institute for Latin American Concern (ILAC) in the Dominican Republic

- **Aryan N. Mooss, MD** – (Noninvasive) – Professor of Medicine, Medical Director of the Outpatient Clinic, Medical Director of Creighton University Medical Center (CUMC) Critical Care

- **Chandra K. Nair, MD** – (Noninvasive) – Professor of Medicine
• Karen S. Rovang, MD – (Electrophysiologist) – Associate Professor of Medicine
• Susan M. Schima, MD – (Noninvasive) – Assistant Professor of Medicine
• Michael D. White, MD – (Invasive) – Assistant Professor of Medicine
• Mark Woodruff, MD – (Invasive) – Assistant Professor of Medicine, Medical Director of Medical Records, Medical Director of Patient Accounts

Other Faculty

• Dan Hilleman, PharmD - Professor of Medicine and Pharmacy Practice
• Fen Wei Wang, PhD – Assistant Professor of Medicine, Research Section
• Mark Williams, PhD - Professor of Medicine and Department of Physical Education and Exercise Science, Director of the Cardiovascular Disease Prevention and Rehabilitation Program, Associate Chair of Research Committee

Other Licensed Independent Practitioners

• Tami Ward, APRN – Nurse Practitioner, Coordinator of Heart Improvement Therapy (HIT) and Heart-Lite Clinics
CARDIOLOGY ADMINISTRATIVE SERVICES

Administration

Located on 3rd Floor in Administrative Area
Connie Mimick x4603 – Administrative & Clinical Administrator
Heidi Winters x4833 – Human Resources Manager

Located on 2nd Floor in Administrative Area
Steph Cannia x4600 – Finance Manager
Dorreen Morrissey x4108 – Purchasing Assistant

Secretarial Assignments

Located on 3rd Floor in Administrative waiting area
Cindy Brickey x4852 – Secretary for Administration and Dr. Esterbrooks
Dianne Pankowski x4934 – Secretary for Dr. Del Core

Located on 3rd Floor in hallway between Executive Suite and Rehab
Jan McNew x4929 – Secretary for Dr. Williams (Rehab), Dr. Arouni, and Tami Ward, APRN

Located on 2nd Floor in North Secretary pod
Kathy Blankenship-Godfroy x4573 – Secretary for Dr. Rovang, Dr. Schima and Dr. Airey
Wendy Greenwood x4235 – Secretary for Dr. Lynch, Dr. Hunter, and Dr. White
Cheryl Hill x4634 – Secretary for Dr. Holmberg and Dr. Lanspa

Located on 2nd Floor in South Secretary pod
Nancy Fast x4571 – Secretary for Dr. Mooss and Dr. Hee
Lois Henderson x4550 – Secretary for Dr. Biddle, Dr. Nair, and Dr. Kadri
Sawn Marion-Phelps x4664 – Secretary for Dr. Woodruff and Dr. Abuissa

Located on 5th Floor at CUMC in Internal Medicine Administration
Luann Miller x4570 – Secretary for Dr. Mohiuddin
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<td>Nathan Almeida, MD</td>
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<td>Shannon Hoos-Thompson, MD</td>
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<td>Madhu Reddy, MD*</td>
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<td>Siva Sontineni, MD</td>
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<td>Venkata Alla, MD</td>
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<td>Anand Deshmukh, MD</td>
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<td>Shawn Mathias, MD</td>
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<td>Shibu Philip, MBBS</td>
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<td>Jamil Abuzetun, MD</td>
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<td>Manu Kaushik, MD</td>
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<td>Sushma Koneru, MBBS</td>
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<td>Kyle Ulveling, MD</td>
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<td>Jyotiranjan Pradhan, MD</td>
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* Chief Fellow
PROGRAM DESCRIPTION

Program Director:  Claire Hunter, MD
e-mail address:  claire.hunter@cardiac.creighton.edu

Program Coordinator:  Sharon Kingston
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Assistant Program Coordinator:  Stefani Coleman
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History:
The Cardiac Center of Creighton University was established in 1961 by Drs. Richard Booth and Vincent Runco, Jr., two cardiologists whose objective was to develop a center devoted to education, research and care of patients with heart disease. For nearly 50 years, The Cardiac Center has been a leader in the fields of cardiovascular research, clinical education, prevention, early detection and treatment of cardiovascular disease. Cardiovascular fellow education has been an integral part of The Cardiac Center since 1963. Nearly 150 fellows have been trained by Creighton cardiology faculty, and are practicing across the United States. All of the current faculty cardiologists have had a portion if not all of their education at Creighton, including undergraduate, medical school, residency and fellowship. It is this constancy which has resulted in the dedicated academic culture that exists today. In 1992, The Cardiac Center opened its present location at 3006 Webster Street, the region’s first freestanding facility dedicated to cardiovascular education, research and outpatient care. The Cardiac Center also has operational sections within Creighton University Medical Center hospital. Additional outpatient locations include, Columbus, NE; Onawa, IA; and at Lakeside Medical Office Building in West Omaha. The Cardiologists and fellows also travel to 11 different rural hospitals approximately 70 times each month to extend services beyond the metropolitan area. Today more than 250 cardiologist, nurses, pharmacists, exercise specialists and health care professionals are part of its dedicated staff. The heart of the Cardiac Center of Creighton University lies in its rich history, vibrant present and optimistic vision for the future of cardiovascular care, education and research.

Duration:
The Duration of the Cardiovascular Diseases Program is three years with 12 accredited positions in the general program emphasizing preparation in academic cardiology. Comprehensive training in all major aspects of clinical cardiology is combined with training in basic and clinical cardiovascular research. Opportunities exist in a variety of research disciplines. Creighton University has a tradition of medical excellence.

Prerequisite Training/Selection Criteria:
All fellow trainees selected for the Cardiovascular Diseases Fellowship Training Program are required to have completed an accredited three year residency program in internal medicine. All fellowship trainees are selected through the NRMP (National Resident Matching Program).
Program Certification:

The Cardiovascular Diseases Fellowship Training Program is certified by the Accreditation Council for Graduate Medical Education (ACGME). All fellowship trainees are required to be licensed by the Nebraska Board of Medical Examiners.

Specific Program Content

The goal of the training program is to provide opportunities for the fellows to develop clinical competence in the field of adult cardiovascular disease.

A. Clinical Experience
   1. Specific Clinical Training
      There are at least 24 months of clinical training, including inpatient and specific clinical experiences:

      a. Four months in the cardiac catheterization laboratory
      b. Six months in noninvasive cardiac evaluations, including:

         1. three months of surface echo, stress echo, and TEE
         2. two months of nuclear cardiology
         3. one month of exercise stress testing and formal interpretation of ECG and ambulatory ECG recording

      c. Two month devoted to invasive electrophysiology, pacemaker follow-up and ICDs.

   2. Inpatient Experience
      There are at least 9 months of non-laboratory clinical practice activities including:

      a. Three months of CCU
      b. 3 months of clinical consultative electrophysiology
      c. 3 months of general cardiology inpatient and consultative service

B. Technical and Other Skills
   1. The program will provide sufficient experience for the fellow to acquire skill in the performance and interpretation of:

      a. history and physical examination
      b. basic and advanced cardiac life support
      c. elective cardioversion and pacemaker implantation
      d. right heart catheterization
      e. left heart catheterization and coronary arteriography
      f. exercise stress testing
      g. echocardiography (surface and transesophageal studies)
      h. pericardiocentesis
      i. programming and follow-up surveillance of permanent pacemakers and ICDs
      j. cardiovascular rehabilitation

   2. The program will provide opportunities for fellows to acquire experience in the performance and interpretation of:
a. intracardiac electrophysiologic studies
b. intra-aortic balloon counterpulsation
c. percutaneous transluminal coronary angioplasty and other PCI

3. The program will provide sufficient experience for fellows to acquire skill in the interpretation of:

   a. chest x-rays
   b. a minimum of 3500 electrocardiograms
   c. a minimum of 150 ambulatory ECG recordings
   d. radionuclide studies of myocardial function and perfusion
   e. cardiovascular literature

C. Formal Instruction
   The program provides formal instruction in:

1. Basic science, including
   a. cardiovascular anatomy
   b. cardiovascular physiology
   c. cardiovascular metabolism
   d. molecular biology of the cardiovascular system
   e. cardiovascular pharmacology, including drug metabolism, adverse effects, indications, the effects on aging, relative costs of therapy, and the effects of non-cardiovascular drugs upon cardiovascular function
   f. cardiovascular pathology

2. Prevention of cardiovascular disease, including
   a. epidemiology and biostatics
   b. risk factor modification
   c. lipid disorders
   d. management of obesity

3. Evaluation and management of patients with
   a. coronary artery disease, its manifestations and complications
   b. arrhythmias
   c. hypertension
   d. cardiomyopathy
   e. valvular heart disease
   f. pericardial disease
   g. pulmonary heart disease, including pulmonary embolism
   h. peripheral vascular disease
   i. cerebrovascular disease
   j. heart disease in pregnancy
   k. adult congenital heart disease
   l. cardiovascular trauma

4. Management of
   a. acute and chronic congestive heart failure
   b. acute myocardial infarction and other acute ischemic syndromes
   c. acute and chronic arrhythmias
   d. preoperative and postoperative patients
e. cardiac transplant patients
f. geriatric patients with cardiovascular disease

5. Diagnostic imaging techniques, including
   a. magnetic resonance imaging
   b. fast computed tomography
   c. positron emission tomography

6. Other areas of importance to patients and physicians:
   a. professionalism
   b. physician fatigue and impairment
   c. risk management
   d. cost effectiveness
   e. end-of-life care
   f. cultural and humanistic issues
GENERAL INFORMATION

1. Mission Statement

The Cardiac Center's mission is: To continue as a leader in cardiovascular education, research and therapy; To maintain uninterrupted access to our services by both referring physicians and patients; To provide cardiovascular care that is clinically effective, convenient and cost effective; To never sacrifice quality care for cost considerations. The purpose of this program is to prepare physicians who already possess a background in Internal Medicine for a career in Cardiovascular Medicine. It is our intention to provide an environment that is suitable for acquiring knowledge, skills, clinical judgment, attitudes, and values that are essential to Cardiovascular Medicine. We feel that a medical cardiologist is a physician who is extremely knowledgeable regarding the differential diagnosis and management of complicated cardiology diseases. The physician is also knowledgeable with laboratory procedures, invasive and noninvasive, employed in cardiovascular diagnosis and research.

2. Training Structure

Fellowship training occurs over the course of 3 years. Two hospitals participate in this program: the Creighton University Medical Center and Bergan Mercy Medical Center. The training program offers training in clinical subspecialties of cardiology (nuclear cardiology, echocardiography, cardiac catheterization/interventional cardiology, electrophysiology, heart failure/transplantation) as well as academic research training. All fellows must be intimately involved in a research project during the course of their fellowship (typically during the second year of training). Throughout all 3 years of fellowship training the fellows maintain half day continuity clinics. The outpatient facilities that may be utilized by the cardiology fellows include The Cardiac Center Outpatient Clinic, 16 outreach sites in outlying Nebraska and Iowa, and various cardiac sections. Those cardiac sections include: Electrocardiography, Cardiac Catheterization and Invasive Cardiology, Echocardiography, Stress Testing, Nuclear Medicine, Electrophysiology and Pacing, Peripheral Vascular Disease, Preventive Medicine and Cardiovascular Research. The trainee will achieve a Level II training qualification in these sections. Fellows rotate on a variety of inpatient and outpatient services as well as through the invasive and non-invasive laboratories and usually spend 12 months in a research laboratory or pursuing clinical research during the course of the training program. An additional year of training is required for certification in Interventional Cardiology and Electrophysiology.

The organization of the training program is flexible, and may be tailored to individual fellow’s goals and interests. However, all fellows are required to complete 24 months of clinical training. For most fellows, time is allocated for research during the second year of training. In occasional cases, specialized research training may occur prior to clinical training as a part of the fellowship training program. It is the intent of the fellowship administration to individualize training within the framework of ABIM, COCATS and ACGME guidelines to optimize each fellow’s experience to achieve excellence in academic cardiology.

The core clinical training for the program is based on the ACC Revised Recommendations for Training in Adult Cardiovascular Medicine Core Cardiology Training III (COCATS III). A copy of the Executive Summary of COCATS 3 is available for review in Appendix I. Training is conducted in compliance with the Accreditation Council for Graduate Medical Education (ACGME) program requirements for general fellowship education in the subspecialties of Internal Medicine and the specific requirements for fellowship education in Cardiovascular Disease.
3. Facilities

**The Creighton Cardiac Center:** The Creighton Cardiac Center is a free-standing cardiology ambulatory clinic which has been accredited by the Joint Commission Accreditation Health Care Organizations. The center received an "Accredited with Commendation", the highest honor a facility can obtain. The center is located across the street from Creighton University Medical Center, the main teaching institution.

The noninvasive laboratory is equipped with modern equipment including M-mode echocardiographic recorders and two-dimensional echocardiographic recorders. The equipment is capable of performing pulsed, continuous wave and color doppler flow studies.

The Cardiac Center has a very extensive telephone dataphone EKG interpretative service involving hospitals in the surrounding five states. These electrocardiograms, plus the main hospital electrocardiograms, are available for electrocardiographic interpretation training experience as well as providing a significant potential for investigative projects.

Other areas that provide required training and experience for the cardiology fellows include:

- **a) A Cardiac Drug Evaluation Clinic** was established to supervise a patient's drug treatment and to evaluate promising new cardiovascular drug therapy. This clinic provides an opportunity to participate in the investigative studies with newer drugs. This clinic provides a background understanding of basic pharmacological cardiac drug therapy and of pharmaceutical principles and analyses.

- **b) The Ambulatory Monitoring Laboratory** uses high speed computer processing to analyze 24-hour EKG recordings. Several recordings, both from St. Joseph Hospital and the surrounding communities, are presented for case analysis every month and provide an extensive source for experience and learning.

- **c) The Pacemaker and ICD Clinic** conducts routine telephone follow-up for over one thousand patients with pacemakers and ICD's throughout a seven state area. It provides clinical exposure in the use and application of the newer pacemaker technologies and understanding of the basic mechanisms of different implantable cardiac pacemakers, defibrilators and programmers.

- **d) A Cardiac Rehabilitation Program**, having three phases, is designed to fully develop the patient's physical, mental, and social potential. The fellow is assigned a regular rotation through this rehabilitation program to understand the different phases. The fellows gain an appropriate understanding of the outpatient rehabilitation as well as preventive medicine.

- **e) A Lipid Clinic** is designed to evaluate risk factors and to identify and treat individuals at high risk. This is in addition to the outpatient care that has become an important part of the clinical management of cardiac patients.

- **f) A Congestive Heart Failure Clinic**

- **g) The Community Health Center** for diverse patients.

- **h) An Anticoagulation Clinic**
i) A library is located on the second floor in the Cardiac Center. The fellows may connect with a network of libraries as well as the Internet from the computer station. It is available for use by the fellows twenty-four hours a day. Creighton University also has a Biomedical Library available.

**St. Joseph Hospital/Creighton University Medical Center:** As the primary teaching hospital for Creighton University's Health Sciences Schools, Saint Joseph Hospital, now known as Creighton University Medical Center, is among the select 1% of all hospitals which not only provides patient care, but also supports education and research.

The Sisters of Mercy opened the hospital in 1870 with a mission to care for the physical, mental, and spiritual well-being of the men and women who were settling in the Midwest.

It grew from a 40-bed, frame facility into a 404-bed health complex with more than a half million square feet of service space. Today the hospital handles approximately 9,700 admissions a year.

Diagnostic services include an extensive pathology laboratory, radiology, ultrasound and nuclear medicine, gastroenterology laboratory and neurophysiology services. Therapy and treatment plans are administered through physical therapy, occupational therapy, cardiac rehabilitation, radiation oncology and pulmonary rehabilitation.

Life Flight helicopter helps support the Hospital’s Trauma Unit. In addition, the helicopter flies missions within a 200-mile radius to bring critically ill patients from outlying hospitals to Omaha for acute care and treatment.

The hospital is also known for its advanced and comprehensive cardiac care units which function as a part of Creighton University's Cardiac Center. From its innovative outreach programs and data-link communications system to its catheterization lab's two bi-planal, digital subtraction angiography systems, the cardiology program is state-of-the-art.

CUMC recognizes that its strength as a regional medical center lies in the ability to meet specialized health needs. To that end, the Hospital has set its sights for future development.

**Bergan Mercy Medical Center:** Bergan Mercy Medical Center is the secondary teaching hospital utilized by the Cardiovascular Fellowship Training Program. The second and third year fellows rotate approximately two times a year at the facility under the supervision of the Cardiac Center Faculty. The rotation gives them the experience and "feel" of being in private practice.

Bergan Mercy Hospital was the result of the expansion for Saint Catherine's Hospital which had outgrown its original capacity to meet the healthcare needs of the Omaha area. Saint Catherine's was founded by the Sisters of Mercy in 1910 and consisted of 40 beds and 10 bassinets. During 1925 and 1950, additional wings were added to the institution giving Saint Catherine's a bed capacity of 200. However, in the late 1950s, it became apparent to Saint Catherine's Board of Directors that another addition would need to be made and proposed to build a new building on a 30-acre site near 75th and Center. The new building was named Bergan Mercy Hospital after the Archbishop Gerard T. Bergan.

Bergan Mercy opened its doors on January 26, 1964 with 250 beds. Today Bergan Mercy Medical Center has grown and contains 400 beds. Bergan Mercy offers a complete range of cardiology services from diagnosis, to treatment, to rehabilitation. The services include 24-hour physician-staffed emergency room and complete diagnostic services in Bergan Mercy's cardiology department and cardiac catheterization lab.
Building on the heritages of the Sisters and their mission of mercy, Bergan Mercy Medical Center houses the miracles of modern medicine and a dedicated staff that sets those miracles in motion.
CURRICULUM

1. Introduction:

The curriculum of the cardiovascular diseases fellowship consists of a variety of clinical experiences and didactic conferences that take place at The Cardiac Center. Fellows rotate on several inpatient services and outpatient services and provide both direct and consultative care. Fellows attend continuity clinics at The Cardiac Center or one of the outreach clinics. Procedural skills are gained as fellows rotate through the invasive and non-invasive laboratories at both hospitals, and extensive experience in cardiac catheterization, echocardiography, and nuclear cardiac perfusion imaging is readily available.

Several conferences occur throughout the week, and a core curriculum lecture series is covered over a two year rotating cycle. Additionally, journal club takes place twice a month and provides a forum to critically review the literature and to debate current topics in cardiology.

A final aspect of the curriculum involves fellow involvement in teaching. This occurs in several settings, including direct clinical teaching of Internal Medicine residents on the inpatient cardiology services (intensive care unit, heart failure service and consult service) as well as assisting in the early training of new cardiology fellows. Fellows are expected to give didactic lectures at echo conferences, cardiology grand rounds, board review lecture series and Case Management conferences.

2. COCATS 3:

COCATS 3 (Core Cardiology Training Symposium) is the curriculum guiding document for fellowships in cardiovascular disease. This document consists of the reports of individual task forces which reviewed and made recommendations for training in each of 13 vital areas of cardiovascular disease. A brief description will be given as to how the Creighton University Fellowship Program in Cardiovascular Disease addresses each Task Force’s recommendations.

Task Force 1: Training in Clinical Cardiology

Extensive training in general clinical cardiology occurs both in the inpatient and outpatient and also in the laboratory and non-laboratory setting. The cardiology fellow is primarily responsible for the management of inpatients with cardiovascular diseases on the consult service, inpatient electrophysiology service, Bergan inpatient consult service. Training in procedural skills is acquired in the cardiac catheterization laboratory, nuclear medicine/cardiology laboratory, echocardiography laboratory and exercise testing laboratory. Outpatient consults and management of chronic cardiovascular disease takes place in the continuity clinics at The Cardiac Center and the outreach clinic locations.

Task Force 2: Training in Electrocardiography, Ambulatory Electrocardiography, and Exercise Testing

Fellows interpret ECG and Holter monitor recordings during the outpatient and inpatient rotation. Fellows interpret Holter monitor recordings during the electrophysiology rotation. Fellows interpret ECG and stress tests on the Nuclear Cardiology rotation and in the stress echocardiography laboratory. In addition, a weekly ECG conference is held for the fellows.
Task Force 3: Training in Diagnostic and Interventional Cardiac Catheterization  Cardiology

All fellows complete at least 6 months in the cath lab. Fellows receive extensive training in vascular access, left and right heart catheterization, diagnostic coronary angiography, invasive hemodynamics, RV biopsy. A monthly Cath Conference is held during which faculty and Interventional fellow present case reviews and case specific didactic teaching. Fellows seeking certification in Interventional Cardiology must do an additional year of training.

Task Force 4: Training in Echocardiography

Transthoracic and transesophageal echocardiography training occurs during the Echocardiography laboratory rotation and during the inpatient rotation. All fellows complete at least 3 months on these rotations to achieve level 1 certification. Additional months for Level 2 certification are available for fellows on elective rotations. All fellows receive training in exercise stress echocardiography, dobutamine stress echocardiography and transesophageal echocardiography after the first month of training in echocardiography. A monthly Echocardiography Conference is held that includes echocardiography case reviews and case specific didactic teaching. This is part of the topics presented at the core curriculum lecture series.

Task Force 5: Training in Nuclear Cardiology

All fellows complete at least 2 months in the Nuclear Cardiology Lab. Fellows interested in achieving Level 2 certification may choose to take additional elective rotations. All fellows have the option to expand their nuclear training and exposure and attend the Fundamental and Comprehensive Nuclear conferences presented by the Institute of Nuclear Medical Education.

Task Force 6: Training in Specialized Electrophysiology, Cardiac Pacing, and Arrhythmia Management

All fellows complete 2 months on the Electrophysiology (EP) service to achieve Level 1 EP training. Fellows wishing to practice Electrophysiology must complete an additional year of training dedicated solely to EP. The EP service covers all EP consults and procedures at CUMC. Fellows evaluate inpatient consults; perform device interrogations with dedicated personnel for device interrogation and/or with the EP faculty physician. Fellows obtain informed consents, explain indications and contraindications of procedures and may assist with procedures performed in the EP laboratory usually during the senior year of training. Hands-on sessions with the device representatives are scheduled at the beginning of each year to acquaint fellows with the device interrogation equipment.

Task Force 7: Training in Cardiovascular Research

The Cardiology Division is active in both clinical and basic science research. All fellows are encouraged to become involved in ongoing research projects. Research is an important and critical component of training in cardiovascular disease. The Division of Cardiovascular Diseases is at the cutting edge of basic science research and clinical research. At the present time, all of our fellows spend up to 12 months engaged in research usually during their second year of training. The fellows are carefully paired with mentors depending on fellow’s research interests. In the future, this requirement will be expended or curtailed in accordance with ACGME guidelines and to tailor it to the individual trainee. Fellows are also encouraged to prepare and submit interesting clinical cases for publication.
Task Force 8: Training in Heart Failure

All fellows rotate through the disease management and Heart Improvement Therapy (HIT) clinics for heart failure evaluation, management, and referral for transplant. Evaluation for transplant also occurs in the HIT clinic. Some fellows with special interest have the opportunity to rotate on the Heart Failure Service. Outpatient consults are performed on patients referred to the heart failure/transplant clinic for assistance with heart failure management or for consideration of cardiac transplantation. Fellows may observe right heart catheterization procedures and right ventricular endomyocardial biopsies on selected patients on this service.

Task Force 9: Training in the Care of Adult Patients with Congenital Heart Disease

Lectures on congenital heart disease and their associated surgical procedures are given as a part of the core curriculum lecture series.

Task Force 10: Training in Preventive Cardiovascular Medicine

In addition to discussing prevention-related issues relevant to individual patients seen on the inpatient services or in the outpatient clinics, dedicated lectures on Preventive Cardiovascular Medicine are provided to the fellows as a part of the core curriculum lecture series. These lectures cover cardiovascular (CV) genetics, clinical epidemiology and biostatistics, principles of clinical trials, principles of outcomes research, principles of clinical pharmacology, principles of behavior change and aspects of compliance, and principles of disease management and multidisciplinary system development. The specific content areas defined by the task force are HTN, hyperlipidemia, thrombosis/hypercoagulable states, smoking cessation, cardiac rehabilitation, exercise physiology, nutrition, psychosocial and behavioral aspects of CV disease, metabolic disorders, gender and racial differences as related to CV disease, and population demographics as related to CV disease. Over a rotating two-year period, the content areas outlined by this task force are addressed through core curriculum conference series, review of current literature in the journal cub setting, state of the art review and controversial topics in the cardiology grand rounds lecture series. Both Creighton faculty and nationally and internationally renowned guest speakers provide an added dimension in discussing these topics with our trainees.


A dedicated rotation in Vascular Medicine is available as an elective rotation in the third year of fellowship. Fellows learn the indications for screening, performance and interpretation of carotid artery, renal artery, and lower extremity peripheral artery disease is emphasized. Percutaneous renal and lower extremity angiograms and interventions are performed in the Cath Lab. Fellows may assist with the diagnostic angiogram. The basic concepts in Vascular Medicine are reviewed in a multidisciplinary setting.

Task Force 12: Training in Advanced Cardiovascular Imaging (Cardiovascular Magnetic Resonance [CMR])

Lectures are available online and are given as a part of the core curriculum lecture series. Fellows pursuing imaging have the ability to complete and elective rotation in CMR.

Task Force 13: Training in Advanced Cardiovascular Imaging (Computed Tomography)
Lectures are available online and are given as a part of the core curriculum lecture series. Fellows have the ability to review cases with 3 faculty members with Level 2 training.

3. Procedure Certification:

Certification levels are defined by COCATS 3 as follows:

**Level 1**: Basic training required of all trainees to be competent consultant cardiologists.

**Level 2**: Additional training in one or more specialized areas that enables the cardiologist to perform or interpret (or both) specific procedures at an intermediate skill level or engage in rendering cardiovascular care in specialized areas.

**Level 3**: Advanced training in a specialized area that enables a cardiologist to perform, interpret, and train others to perform and interpret specific procedures at a high skill level.

In general, level 2 certification is required to independently interpret and/or perform a specific cardiac procedure and level 3 certification is required to run a procedure-related laboratory.

All fellows are required to maintain detailed documentation of the procedures they perform as described in the “Procedure Documentation” section of this manual. This procedure log is to be reviewed twice a year by the program director during the fellow’s six month evaluation.

4. ACGME Core Competencies:

The curriculum is designed to meet the required core competencies as defined by the ACGME. The core competencies that must be demonstrated are:

**A. PATIENT CARE**: Fellows must be able to provide patient care that is compassionate, appropriate, and effective in the treatment of health problems and the promotion of health.

**B. MEDICAL KNOWLEDGE**: Fellows must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.

**C. PRACTICED-BASED LEARNING AND IMPROVEMENT**: Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

**D. INTERPERSONAL AND COMMUNICATION SKILLS**: Fellows must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients’ families, and professional associates.

**E. PROFESSIONALISM**: Fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

**F. SYSTEMS-BASED PRACTICE**: Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.
The curriculum assures the teaching and assessment of these competencies, and the following listing
of general core competency elements applies to all rotations of the fellowship.

**Patient care:**
1. Fellows will demonstrate the ability to take a history relevant to cardiovascular diseases and
   perform a directed cardiovascular physical examination in an adult patient population that includes
   both men and women and is ethnically diverse. Patient encounters will occur in both the inpatient
   and outpatient setting, including all cardiac procedure laboratories.
2. Fellows will demonstrate the ability to judiciously order diagnostic tests that are clinically
   appropriate and cost effective.
3. Fellows will demonstrate the ability to safely perform all invasive diagnostic tests for which they
   seek certification. In addition to procedure performance, fellows will be expected to demonstrate
   knowledge of appropriate indications, contraindications, and post-procedure complications specific
   to each cardiac procedure.
4. Fellows will demonstrate the ability to accurately interpret the results of all invasive and non-
   invasive diagnostic tests and procedures for which they seek certification.
5. Fellows will demonstrate the ability to integrate all social aspects of patient care, including gender
   sensitivity, cultural diversity, and economic issues.
6. Fellows will demonstrate the ability to provide appropriate follow-up care in both the inpatient and
   outpatient setting.
7. Fellows will demonstrate the ability to synthesize all history, physical examination, and diagnostic
   testing information into a well-thought out logical plan of care that is documented in a clearly
   organized consult or note.
8. Fellows will demonstrate the ability to triage and manage critically ill patients in the on-call setting.
9. Fellows will demonstrate the ability to be patient advocates by utilizing hospital resources, such
    as social work, consult services, pharmacy services, etc, to help facilitate the best possible patient
    care.
10. The above elements will be evaluated by direct observation and interaction with the cardiology
    faculty.

**Medical Knowledge:**
1. Fellows will assist in conducting rounds on inpatient services and/or present patients directly
   thereby allowing the supervising attending physician to assess their medical knowledge as it
   relates to specific patient cases.
2. Fellows will provide periodic didactic teaching sessions for the house staff on inpatient teaching
   rounds.
3. Fellows are expected to develop a reading system that will facilitate a broad knowledge base of
   cardiology. This reading system should include major cardiology texts, landmark clinical trials,
   and current literature published in common cardiology journals.
4. Fellows will present at a variety of weekly conferences, including Echo and Cath Conference.
5. Fellows will give a formal grand rounds lecture during their third year of fellowship.
6. Fellows will present an article yearly at Journal Club.
7. Fellows will maintain a thorough procedure log to document technical skills training.
8. Fellows are expected to attend at least 80% of teaching conferences that are designed to cover a
   thorough curriculum in cardiovascular diseases.
9. Each fellow will have the opportunity to attend a national meeting once a year.
10. Fellows present patients to the attending and are directly observed while performing invasive
    procedures.

**Practice-Based Learning and Improvement:**
1. Fellows will learn to use information technology, literature sources, and other available resources to learn to practice evidence-based medicine that is guided by sound medical principles consistent with the standard of care and approved practice guidelines.
2. Fellows will learn to individualize patient management based on the available resources and the circumstances particular to the patient.
3. Fellows must be able to analyze their clinic and rotation experiences and discuss methods for improvement as it relates to patient care, fellow education, and junior house staff education.
4. Fellows must be able to recognize their own limitations in knowledge base and clinical skills and be receptive to life-long learning.
5. Fellows will periodically meet as a group with the program director to discuss identified problems and potential solutions.
6. Fellows must be able to use the medical literature to update their practice methods and improve patient care.
7. Fellows must be able to critically evaluate the medical literature.
8. Fellows approach to and use of the medical literature will be assessed by the supervising staff physician on a given rotation.
9. The ability of the fellow to critically evaluate the literature will be assessed during the fellow’s yearly presentation at journal club.

Interpersonal and Communication Skills:
1. Fellows will learn to effectively communicate as a consultant cardiologist to the referring health care provider and other members of the health care team.
2. Fellows will learn to communicate a patient’s medical diagnosis and potential therapies or procedures in a manner that is easily understood by the patient and his or her family members.
3. Fellows will learn to generate accurate, thorough, and easily understood reports for cardiac procedures.
4. Fellows will learn to listen to and understand patient and family member concerns.
5. Fellows are expected to provide thorough, timely, and legible written consultations in the patient’s medical record.
6. These skills will be evaluated by direct observation from the attending physicians as fellows rotate through the clinical services, and the results will be reported via monthly rotation evaluations.

Professionalism:
1. Fellows are expected to treat patients and their family members, colleagues, house staff, support staff, and administrative staff members with appropriate respect.
2. Fellows are expected to approach patient care with compassion and integrity and to be sensitive to individual patient needs with respect to patients’ age, gender, culture, and/or disabilities.
3. Fellows are expected to maintain the highest ethical standards including maintaining strict patient confidentiality, ensuring adequate informed consent, adhering to ethical business practice, and informing patients of all practical therapeutic options.
4. Fellows are expected to be committed to excellence and on-going professional development.
5. Fellows are expected to report to work in a timely fashion that provides adequate time to prepare for rounds, instruct junior house staff, and attend to complicated or critically ill patients.
6. Fellows will check out any patient issues that may need attention overnight to the on-call fellow.
7. Professionalism will be evaluated through direct observation by attending physicians and reported via rotation evaluations.
8. Professionalism will be evaluated by support staff members via 360 degree evaluations that will be developed.

Systems-Based Practice:
1. Fellows will learn to interact professionally in the context of the health care system as a whole and
remain sensitive to the role of ancillary services, other health care providers, good business practice, and adherence to high ethical standards.

2. Fellows will learn to work with all members of the health care team (nurses, social workers, pharmacists, etc) to provide the best and most efficient plan of care for all patients.

3. Fellows will specifically learn to integrate various cardiology services and procedures with the medical and surgical services involved in the patient’s care.

4. Within cardiology, fellows will learn to integrate the services and procedures provided by the various cardiac disciplines involved in the patient’s care.

5. Fellows will learn to partner with a patient’s primary care provider in order to ensure that the best possible care is provided to the whole patient.

6. Fellows will learn to practice cost-effective health care while not compromising quality of care.

7. Fellows are expected to be strong patient advocates.

5. CONFERENCES:

The training program provides didactic instruction in the following specified topics, with which each fellow is expected to demonstrate a good understanding.

1. Basic science
   a. Cardiovascular anatomy
   b. Cardiovascular physiology
   c. Cardiovascular metabolism
   d. Molecular biology of the cardiovascular system
   e. Cardiovascular pharmacology
   f. Cardiovascular pathology

2. Prevention of cardiovascular disease
   a. Epidemiology and biostatistics
   b. Risk factors
   c. Lipid disorders

3. Evaluation and management of patients with:
   a. Coronary artery disease and its manifestations and complications
   b. Arrhythmias
   c. Hypertension
   d. Cardiomyopathy
   e. Valvular heart disease
   f. Pericardial disease
   g. Pulmonary heart disease
   h. Peripheral vascular disease
   i. Cerebrovascular disease
   j. Heart disease in pregnancy
   k. Adult congenital heart disease
   l. Complications of therapy

4. Management of:
   a. Acute and chronic congestive heart failure
   b. Acute myocardial infarction and other acute ischemic syndromes
   c. Acute and chronic arrhythmias
   d. Preoperative and postoperative patients
   e. Cardiac transplant patients

5. Diagnostic techniques, including:
   a. Magnetic resonance imaging
b. Fast compute tomography

c. Positron emission tomography

There are regularly scheduled Cardiology conferences in which the Fellows actively participate in the planning and presentation of various topics. In addition, presentations by visiting professors are organized several times during the year. Attendances at Cardiology Core Teaching Conferences are mandatory for the fellows with a minimum attendance requirement of 80%. There is formal process of evaluation of the conferences under the Creighton Continuing Medical Education Guidelines. The feedback from the attendees is periodically reviewed by the Program Director and the Academic Affairs Committee for periodic reviews and facilitates continued improvement in the quality and content of the educational experience. The scheduled conferences are as follows:

1. **Cardiology Grand Rounds** on the second, fourth, and fifth Mondays. Cardiology Grand Rounds is held from 1 to 2 p.m. in the Arthur & Florence Enewold Cardiac Center Auditorium. The topics are selected by Creighton faculty and Cardiology Fellows as well as visiting scholars and professors. The primary purpose of the Cardiology Grand Rounds is to present and review the most recent advances in Cardiovascular Medicine. All Fellows are required to present at least one Grand Rounds lecture per year. The quality, content and communication skills of the trainee will be assessed by the core faculty during these presentations.

2. **Cardiology Journal Club** is conducted on the second and fourth Monday evenings from 6 to 8 p.m. in the Cardiac Center Large Conference Room. The usual journals reviewed are Journal of American College of Cardiology, Circulation, New England Journal of Medicine and Journal of the American Medical Association. Important articles are selected by the Chief Fellow and are approved by the Program Director and then assigned to each Fellow. The Fellow is expected to review the article in detail and present to the rest of the group for discussion.

3. **Case Management Conference** is held every Friday from 1 to 2 p.m. in the Arthur & Florence Enewold Cardiac Center Auditorium. The two Creighton in-patient services and the Bergan Mercy Cardiology Service are expected to present at least one case a month. A Mortality and Morbidity conference is also given ten times a year in place of the Case Management conference. The conference is attended by Cardiology faculty, fellows, residents and students rotating through Cardiology, Cardiovascular Surgery and, if necessary, Nuclear Medicine and Radiology. After presenting the clinical history, reviewing the relevant invasive and noninvasive studies, a discussion on management options takes place followed by a brief review of the relevant topic pertaining to the case in discussion. This review is given by the Cardiology Fellow who is in charge of the case.

4. **Basic Science Lecture** is given the first Thursday of every month by Dr. Againdra Bewtra. Basic Science is held from 1 to 2 p.m. in the Cardiac Center Large Conference Room. It involves a variety of topics including molecular and vascular biology.

5. **Research Design Conference** is held every second Thursday from 1 to 2 p.m. in the Cardiac Center Large Conference Room. Every month will have a new lecture topic and assignment for each group to complete by the following month. Monthly updates of the progress of the group research projects by the fellows are also required during these. The goal of this conference is to acquire the tools to develop a research protocol from idea to publication. The research department also has small groups that meet every other month. The small group topics are Anticoagulation, Non-Invasive/EP/Heart Failure, Interventional and Prevention. The fellows are encouraged to join the research groups that interest them.
6. **EKG Review** is held every Tuesday from Noon to 1 p.m. in the Cardiac Center Harvey Room. The fellows will review various EKG’s with a faculty member every week.

7. **Core Curriculum Conferences** are held on the third and fourth Thursdays from 1 to 2 p.m. in the Cardiac Center Large Conference Room. Presentations will consist of Echo, EP or Interventional topics. Echo presentations will be given by third year fellows and non-invasive faculty. EP presentations will be made by the EP faculty and occasionally device programmers. Interventional presentations will be given by the Interventional fellow and invasive faculty members.

8. **Didactic Lectures** are held on the first and third Mondays from 1 to 2 p.m. in the Arthur & Florence Enewold Cardiac Center Auditorium. One-hour didactic lectures are given by Creighton faculty on selected topics which include cardiovascular imaging, cardiovascular pharmacology, invasive and noninvasive diagnostic techniques, interventional cardiology and clinical cardiology. In addition, faculty from other Creighton departments including Cardiovascular Surgery, Vascular Surgery, Radiology and Pathology are scheduled to present one-hour lectures on relevant topics.

9. **Combined Echo Conference** is held once a month and given alternatively at the Creighton Cardiac Center and the University of Nebraska Medical Center at 7 a.m. When this conference is held at the Creighton Cardiac Center it is held in the Arthur & Florence Enewold Cardiac Center Auditorium. This multi-institutional conference involves presentation of case studies with relevant ultrasound images given by Creighton Cardiac Center, University of Nebraska Medical Center and Creighton/University of Nebraska Division of Pediatric Cardiology. The primary responsibility of presentation and discussion of Creighton Cardiac Center cases is assigned to one of the senior Fellows in Cardiology.

10. **Fellow Board Review Conference** is the first Wednesday of every month from 1 to 2 p.m. in the Cardiac Center Large Conference Room. Cardiology fellows present various topics that will be on the Cardiology Board Exam with the help of core faculty who attend the Fellow Board Review Conferences. These conferences are organized to review the latest practice guidelines in a board review question and answer format to help the trainees prepare for the ABIM Cardiology Specialty Board. A specific set of guidelines are selected and assigned to one Fellow to prepare a list of 20 questions. All the other Fellows are expected to take the test in 35-40 minutes and the answers are reviewed briefly during the remainder of the session. The tests completed by the fellows are kept in their file. This gives an excellent opportunity for the program to test the knowledge base of the trainees on a regular basis.

11. **Other conferences.** The Cardiology trainees are encouraged to participate in Internal Medicine Grand Rounds and other conferences of interest. Every academic year 2 to 4 visiting professors are sponsored by the Cardiac Center. During these visits, the Fellows are required to present cases to the visiting scholar for discussion. These sessions would also give the trainee to interact with core faculty from other training programs. These types of interactions have been extremely useful in past years. At the end of these visiting professor programs, the program leadership is given feedback regarding the program.
INTRODUCTION

The Creighton University Fellowship Program in Cardiovascular Disease is a three year program designed to train clinical and academic cardiologists. We are committed to training fellows to assume leadership role in cardiovascular medicine in basic and clinical research and clinical cardiology. The curriculum is organized to provide increasing levels of responsibility for trainees with respect to patient care and procedure performance. Adequate progression through the curriculum is assessed by evaluating each fellow’s clinical judgment, clinical skills, medical knowledge, procedural skills, professionalism, communication skills, leadership ability, and continuing scholarship. At all times during their training, fellows are expected to conduct themselves with the highest of ethical standards and are expected to display integrity, honesty, compassion, and respect to all members of the health care team, patients, and patient family members. Fellows should always be strong advocates for all patients under their care and should utilize the health care system to maximize the benefit to each individual patient while respecting the patient’s expressed wishes. In the end, the welfare of the patient should be the fellow’s primary concern.

FIRST YEAR FELLOWSHIP TRAINING

General:
The overall purpose of the first year of training is to provide new fellows with a broad exposure to all aspects of clinical cardiology as well as ample introductory experience to a wide variety of invasive and non-invasive cardiac procedures. Fellows will also be introduced to both clinical and basic science research. By the end of the first year, fellows will be able to evaluate cardiac patients and to initiate care appropriate for a wide variety of acute and chronic cardiac conditions but will not be expected to be experts in either clinical care or procedural skills. The goals for the first year of training are for fellows to be introduced to the full range of cardiovascular disease clinical and research opportunities, identify a specific area of interest and a projected career path, be paired with an appropriate mentor, and to select a research project.

Clinical Judgment and Skills:
By the end of the first year of fellowship training, fellows should be able to obtain an accurate and complete cardiac history and to perform a thorough but directed cardiac physical examination for patients being evaluated for a wide variety of cardiovascular diseases. During their first year of training, fellows will learn the proper role of the various invasive and non-invasive cardiac procedures and tests. Using the information available from the history, physical examination, and test results, first year fellows should be expected to be able to develop a differential diagnosis and a plan of care for common acute and chronic cardiovascular disease states. Additionally, first year fellows will be expected to identify life-threatening cardiovascular conditions and emergencies and to be able to initiate prompt therapy. First year fellows will gain experience in understanding the pathophysiologic basis of cardiac conditions. First year fellows should be able to contribute to patient management discussions on rounds in conjunction with the staff physician.

Medical Knowledge:
First year fellows will begin to build the critical knowledge base that will permit them to function as competent well-rounded cardiologists. This knowledge will be acquired by reading current cardiology literature sources and standard textbooks as well as via didactic lecture sessions. Clinical knowledge
will be gained in the following areas: coronary artery disease, myocardial diseases and heart failure, congenital heart disease, valvular heart disease, peripheral vascular disease and diseases of the aorta, cardiovascular prevention, hypertension, pericardial diseases, cardiac dysrhythmias and clinical electrophysiology, cardiothoracic surgery, cardiac rehabilitation, and pulmonary hypertension. First year fellows will begin to learn the basic literature related to cardiovascular testing and procedures and will begin to develop interpretive skills.

Procedural Skills:
First year fellows will learn the indications, contraindications, and potential complications related to each major cardiovascular procedure. First year fellows will also begin to develop a working knowledge of the risk/benefit assessment that must take place prior to performing an invasive cardiac procedure. First year fellows will begin to learn how to safely perform procedures and to interpret the data obtained. These procedures will include electrocardiograms, ambulatory ECG monitoring, transthoracic and transesophageal echocardiograms, cardiac catheterization (hemodynamic and angiographic studies), exercise and pharmacologic stress testing, cardiac CT and MRI, electrical and chemical cardioversion, temporary pacemaker placement, and nuclear cardiac imaging. First year fellows will be instructed in how to properly document procedure findings and will be expected to document a thorough and accurate report on any procedure performed. By the end of the first year, fellows should be expert in the pre-procedural and post-procedural assessment of patients referred for cardiac testing and should participate in the performance of invasive procedures only under the direct supervision of an attending cardiologist.

Teaching:
First year fellows will be expected to provide teaching to medical students and residents on the basics of common cardiovascular conditions and routine bedside invasive procedures especially on the consult service. Teaching methods should include actively participating in case discussions on rounds, conducting brief teaching sessions, and introducing house staff to common cardiology literature sources (journal articles, textbooks, etc).

Professionalism:
First year fellows are expected to conduct themselves with exemplary professionalism at all times, as evidenced by the display of honesty, integrity, respect, and compassion when caring for patients and interacting with patient families, referring providers, and other members of the health care team. First year fellows will accept responsibility for the care of cardiac patients and will be held accountable for conducting themselves with the highest of ethical standards at all times.

Communication Skills:
First year fellows will learn how to write a thorough, informative, and instructive cardiac consultation note as well as accurate and detailed procedure notes. First year fellows will learn to verbally communicate effectively with patients, families, and all members of the health care team. Fellows will learn the importance of maintaining complete and accurate medical records easily accessible to referring providers.

Leadership:
First year fellows should be able to provide guidance for medical students and residents as it relates to routine patient care. First year fellows should be able to participate in management discussions on teaching rounds in conjunction with the service attending.

Continuing Scholarship:
First year fellows will be expected to develop a reading program that will build the foundation of basic
cardiology knowledge necessary to become a competent clinical cardiologist. Fellows will learn the significance of keeping current with the literature in order to be able to adapt their clinical practice as new advances are made. Attendance at journal club will allow the fellows to keep abreast of the current literature. Fellows will improve their ability to critically review the cardiovascular literature and to correctly apply the literature in their clinical practice. Fellows will be introduced to both clinical and basic science research as it applies to cardiovascular diseases in order to help them select their fellowship research project.

SECOND YEAR FELLOWS

General:
Second year fellows will continue to build upon the knowledge and skills gained during the first year of training and will begin to focus on their particular area of interest. Second year fellows will be given greater latitude in patient management decisions in the continuity of care clinic. During the second year, the fellow’s research project should be well-established, and each second year fellow should be able to present his/her activities at the dedicated research conference. Depending upon the outcome of their research work, some second year fellows may be positioned to submit their findings in abstract form to national or regional scientific meetings.

Clinical Judgment and Skills:
Second year fellows will improve upon the clinical judgment and skills acquired during their first year of training by continued participation in patient care in a variety of settings and will work to master the development of acute and chronic management plans for patients with cardiovascular diseases. Second year fellows will be expected to understand the pathophysiologic basic of common cardiovascular diseases and will use this knowledge to help guide clinical management decisions. Fellows will gain a better understanding of how best to utilize cardiac procedures in the care of patients, will demonstrate continued improvement in test result interpretation, and will continue to refine their understanding of the risks and benefits of the various cardiac procedures. During the second year, fellows will continue to improve their ability to synthesize the cardiology literature and apply it in an evidence-based manner to the care of their patients.

Medical Knowledge:
Second year fellows will continue to advance their knowledge base by critically reviewing the cardiology literature and continuing to read standard cardiology texts. They are expected to regularly attend the core curriculum conference, journal club and the weekly Case Management conference.

Procedural Skills:
Second year fellows will be skilled in determining the appropriateness of planned procedures. The development of procedural skills will be limited by the number of research months during the second year of training.

Teaching:
In addition to teaching medical students and residents, second year fellows are expected to help introduce first year fellows to the program and to assist with bedside procedures (e.g., PA catheter placement, temporary pacemaker placement, transthoracic echocardiography, etc) especially when the second year fellows are on weeknight or weekend call.

Professionalism:
Second year fellows will continue to perform their duties with utmost professionalism utilizing the highest of ethical standards.
Communication Skills:
Second year fellows will work to improve their written and verbal communication skills relative to direct patient care reporting. Second year fellows will continue to gain experience in interacting with patients, family members, and all members of the health care team especially in the continuity of care clinic. Second year fellows will understand the importance of maintaining complete and accurate medical records easily accessible to referring providers.

Leadership:
Second year fellows will be expected to be role models for first year fellows and to set the highest professional and ethical standards for them to follow. Second year fellows should be able to provide guidance for medical students and residents as it relates to routine patient care.

Continuing Scholarship:
Second year fellows will continue to update their cardiovascular knowledge base via critical review of the literature and continued reading of standard cardiology texts. Second year fellows will be expected to be able to interpret the cardiology literature correctly and to apply it appropriately in an evidenced-based manner to the care of individual patients. Second year fellows will be expected to formulate a meaningful research experience in conjunction with an appropriate mentor. Second year fellows may apply for research grant funding after discussion with their research mentors and gathering preliminary data.

THIRD YEAR FELLOWS

General:
The overall purpose of the third year of fellowship is for trainees to perfect their clinical patient care and procedural skills and to be able to practice evidence-based medicine for the full spectrum of cardiovascular diseases. By the end of their third year, fellows should be deemed capable of practicing clinical cardiology competently and independently and to safely and expertly perform all procedures. Third year fellows should fully meet all six of the ACGME general core competencies. Additionally, third year fellows may submit the results of their research project as an abstract to the appropriate forum. They will also be encouraged to submit full-length manuscripts for publication in clinical or scientific journals. The faculty will provide guidance and support with regard to such scholarly endeavors.

Clinical Judgment and Skills:
Third year fellows will improve upon the clinical judgment and skills acquired during the first two years of training by further participation in patient care in a variety of settings and will be expected to apply evidence-based medicine to develop comprehensive acute and chronic management plans for the full spectrum of cardiovascular diseases. Third year fellows will be expected to skillfully select the most appropriate cardiac tests for individual patients and to expertly apply the results leading to the safest and most optimal care. By the end of the third year, fellows should be able to manage all cardiac patients expertly and should be able to function independently as a consultant cardiologist.

Medical Knowledge:
Third year fellows will continue to build their cardiology knowledge base by further review of the available literature, and by the completion of the training program, fellows will be expected to be well-versed in all aspects of the clinical cardiovascular diseases literature. Third year fellows will be able to expertly interpret cardiac tests and to apply the results appropriately to the care of individual cardiac patients.
Procedural Skills:
Third year fellows will perfect their procedural skills and will become skilled in performing procedures in complicated patients. Third year fellows will have a thorough understanding of the risks and benefits of the procedures they perform, will be able to manage associated complications, will be able to expertly interpret and apply all data obtained, and will be able to effectively communicate procedure results to patients and referring providers.

Teaching:
Third year fellows will be expected to teach medical students, residents, and junior cardiology fellows on clinical services, laboratory and non-laboratory setting and actively participate in conferences.

Professionalism:
Third year fellows will continue to conduct themselves professionally at all times and with the highest of ethical standards.

Communication Skills:
Third year fellows will be able to write complete, accurate, and informative consults as well as detailed and accurate procedure reports. Third year fellows will be able to communicate effectively with patients, their families, and all members of the health care team.

Leadership:
Third year fellows should be able to function as team leader for the clinical cardiovascular services under the direction of the assigned staff physician. Third year fellows will be expected to mentor junior fellows in all aspects of the training program.

Continuing Scholarship:
Third year fellows should have a well-established educational program that will continue into their practice and allow them to stay current with the cardiology literature and should be expert at interpreting and applying new data to enhance patient care. By the end of third year, fellows are expected to demonstrate the outcome of their research activities in an appropriate formal setting. Those interested in pursuing a career in academic medicine will become acquainted with the benchmarks of academic success and will gain an understanding of the extramural funding process as it pertains to their specialty area.
THE PROGRESSIVE LEARNING OBJECTIVES

The Progressive Learning Objectives supplements the six primary Core Competency Curricula. The Progressive Learning Objectives document presents the collected Core Competency learning objectives, extracted from each of the six primary Core Competency Curricula. These learning objectives are collected for the convenience of our fellows and faculty, allowing rapid review of expectations for each training level. The stated objectives should never limit the achievement expectations of our fellows. Fellows of all training years should strive to continuously improve their competency in the diverse skills of consummate internists.

Specific Competency Objectives for Patient Care

1. Relationship-building skills. Fellows must demonstrate the importance of effective communication when caring for patients as they collect highly personal information.
   a. 1st Year and 2nd Year fellows should consistently demonstrate integrity, respect, compassion and empathy for patients and their families. They should establish trust and recognize that the primary concern is the welfare of the patients. Fellows at this level of training will respect personal preferences and understand patient rights. They will engage in shared decision making with their patients.
   b. 3rd Year fellows should demonstrate the above and aid junior peers in effective communication with patients.

2. History taking. Fellows must demonstrate an understanding of the importance of history in deriving a differential diagnosis.
   a. 1st Year fellows will consistently gather essential and accurate information. The database will be organized in manner consistent with accepted medical convention and charted in a timely and efficient manner. The information will be comprehensive and include data gathered by other providers and laboratory investigations. By completion of the 1st year, histories will be completely hypothesis driven.
   b. 2nd Year and 3rd Year fellows will be precise, logical, and efficient in their data collection in addition to the above.

3. Physical Examination. Fellows will demonstrate the importance of performing an appropriate and relevant physical exam.
   a. 1st Year fellows will perform a comprehensive physical exam with a consistent sequence. Fellows at this level will identify normal form abnormal and will describe the physiological and anatomical basis for findings. Fellows will demonstrate the ability to augment their physical exam to elicit data not obtained with standard movements.
   b. 2nd Year fellows, in addition to the above, will correctly detect subtle findings and understand their significance. They will be able to teach appropriate physical exam skills to junior peers and medical students.
   c. 3rd Year fellows additionally will strive to perform a focused physical exam at the level similar to a sub-specialist, and understand the sensitivity and specificity of maneuvers.

4. Clinical Judgment. Medical Decision-Making and Management Plans. Fellows will progressively become more adept at assimilating information that they have gathered from the history and physical exam.
a. 1st Year will be able to identify all a patient’s problems and develop a prioritized differential diagnosis. 1st Year fellows will begin to develop therapeutic plans that are evidenced or guideline based. Fellows will establish an orderly succession of testing based on their history and exam findings. They will demonstrate appropriate use of diagnostic and therapeutic procedures.

b. 2nd Year fellows will regularly integrate medical facts and clinical data while weighing alternatives and keeping in mind patient preference. They will regularly incorporate consideration of costs, risks, and benefits when considering diagnostic tests and therapies. They will consistently monitor and follow-up patients appropriately.

c. 3rd Year fellows will demonstrate the above and in addition, will demonstrate appropriate reasoning in ambiguous situations, while continuing to seek clarity. Fellows at this level of training will not overly rely on tests and procedures. They will assist junior trainees and medical students to become efficient managers through the appropriate use of clinical judgment and effective decision making. 3rd Year fellows will consistently establish monitoring procedures and demonstrate the ability to change therapeutic programs for ineffectiveness or adverse side effects.

5. Oral Case Presentation Skills. Fellows at all levels of training will be adept in oral presentation skills. This will be demonstrated by delivering a case presentation that is organized consistent with medical convention. They will include all important aspects of the history, physical exam, and laboratory investigations. The assessment will be well developed and include an in-depth differential diagnosis and carefully executed diagnostic and therapeutic plan. Extraneous information will be deleted and fellows will appropriately and accurately field audience questions. Pertinent materials such as x-rays and EKG’s will be included and correctly interpreted.

6. Counseling. Fellows will recognize the importance of clear and accurate instructions for patients and their families.

a. 1st Year fellows will give patients accurate instructions regarding usage of their medications and follow up care. They will document their counseling conversations and use flow sheets as necessary.

b. 2nd Year fellows will effectively counsel and educate patients about pertinent health issues, tests and treatments. They will recommend appropriate health prevention testing.

c. 3rd Year fellows, in addition to the above, will consistently and thoroughly educate patients and their families, using patient education as a form of intervention and partnering.

7. Use of technology. Fellows will understand the increasing role that technological advancements bring to the bedside.

a. 1st Year fellows will demonstrate use of computer-assisted database for diagnosis and decision-making. They will utilize the electronic medical record during continuity clinic. They will regularly utilize drug information and drug-drug interaction programs.

b. 2nd Year and 3rd Year fellows, in addition to the above, will utilize electronic databases for patient educational materials.

8. Procedures. Fellows will competently perform medical procedures essential for the practice of Cardiology.

a. 1st Year fellows will demonstrate knowledge of procedural indications, contraindications, necessary equipment, process for handling specimens and patient after-care. They will participate in informed consent and assist the patient with decision making through their knowledge. Fellows will attend to the comfort of the patient. 1st Year fellows will be supervised for all procedures. Procedures will be thorough documented.

b. 2nd Year and 3rd Year fellows will be supervised where skill level dictates. They will
demonstrate extensive knowledge and be facile in the performance of procedures while minimizing risk and discomfort to patients. They will assist their junior peers in skill acquisition.

9. Preventative Care. Fellows will understand the importance of disease prevention and health maintenance.

   a. 1st Year fellows will demonstrate the ability to use electronic medical record (EMR) tools to ensure that their patients receive recommended screening tests and other preventative practices. Fellows will utilize EMR tools for chronic illness care in an effort to decrease the incidence of complication in those with chronic disease states.

   b. 2nd Year and 3rd Year fellows, in addition to the above, will demonstrate appropriate age-based screening and preventative care. These fellows will remain vigilant for changes in recommendations from federal and professional societies and apply recommendations to their patient population.

   c. 3rd Year fellows will demonstrate an understanding of public health and its broad implications to the population being served.

10. Patient-focused care. Fellows at all levels of training will demonstrate sensitivity and responsiveness to patients’ age, culture, gender and disabilities. Fellows will work effectively with allied health care professionals and physician consultants to provide effective patient-focused care.

Medical Knowledge Specific Competency Objectives.

Fellows must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care. Fellows are expected to:

1. Know and apply the basic and clinically supportive sciences which are appropriate to their discipline
   a. 1st Year fellows will
      i. Demonstrate knowledge of common procedural indications, contraindications, equipment, specimen handling and patient after-care.
      ii. Demonstrate knowledge of basic and clinical sciences.
      iii. Demonstrate satisfactory knowledge of common cardiac conditions, sufficient to manage urgent complaints with supervision.
   b. 2nd Year fellows will additionally
      i. Demonstrate a progression in content knowledge and analytical thinking in order to develop well-formulated differential diagnoses for multi-problem patients.
      ii. Demonstrate understanding and responsiveness to socio-behavioral issues.
      iii. Develop knowledge of statistical principles. Understand and appropriately use sensitivity, specificity, predictive values, likelihood ratio, number needed to treat, and odds ratios.
   c. 3rd Year fellows will additionally
      i. Demonstrate growing knowledge in the area of their chosen area of Cardiology.
      ii. Demonstrate knowledge regarding performance of procedures while minimizing patient risk and discomfort.
      iii. Exhibit knowledge of effective teaching and evaluation methods, including RIME, and evaluation techniques.
      iv. Successfully meet ECG reading requirements according to the ECG, Cath and Echo
2. Demonstrate an investigatory and analytic approach to clinical situations
   a. 1st Year fellows will
      i. Exhibit use of CUMC and hospital library resources.
      ii. Exhibit self-motivation to learn.
      iii. Demonstrate sufficient analytic skills necessary to develop appropriate assessments and plans for common medical diagnoses and complaints.
   b. 2nd Year fellows will additionally
      i. Independently present up-to-date scientific evidence to support hypotheses.
   c. 3rd Year fellows will additionally
      ii. Regularly display self-initiative to stay current with new medical knowledge.
      iii. Regularly demonstrate knowledge of the impact of study design on validity or applicability to practice.
      iv. Present a formal Grand Rounds conference, demonstrating in-depth knowledge of a clinical topic of their choice.

Practice Based Learning and Improvement Specific Competency Objectives
The ability to use clinical practice and direct patient care as a venue for practice improvement and learning is a life long process; however it is expected that a fellow will satisfactorily function as follows:

1. Evidence Based Medicine: Location, appraisal, and assimilation of evidence from scientific studies related to patients’ health problems. Application of knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
   a. 1st Year fellows should demonstrate the ability to:
      i. Be self motivated to acquire knowledge
      ii. Locate scientific literature to support decision-making
   b. 2nd Year fellow should additionally:
      i. Be able to appraise and assimilate scientific literature
      ii. Demonstrate understanding and use of an evidence-based approach in providing patient care
      iii. Quickly access appropriate reference material for patients in the ICU
      iv. Voluntarily (without prompting or assignment) discuss and research relevant literature to support decisions
   c. 3rd Year fellows should additionally
      i. Effectively and efficiently use consulting services to improve both patient care and self-knowledge, appropriately integrating evidence based medicine with expert opinion and professional judgment
      ii. Acquire and use appropriate evidence-based information when acting as a consultant
      iii. Apply knowledge of study design and statistics to relevant literature
      iv. Respond to critical problems in a manner reflecting more than rote learning and protocol management. S/he should be able to utilize and suggest data-driven modification of protocols.

2. Continuous Quality Improvement and Quality Assurance: Analysis of practice experience and performance of practice-based improvement activities using a systematic methodology. Obtaining and using information about their population of patients and the larger population from which their
patients are drawn.

a. 1st Year fellows should demonstrate the ability to
   i. Understand his or her limitations of knowledge
   ii. Ask for help when needed
   iii. Admit to errors and seek help in remedying them
   iv. Accept feedback and develop self-improvement plans
   v. Seek formative feedback on performance
   vi. Deliver care that reflects learning from previous experiences
   vii. Assess patient adherence to ambulatory regimens and accordingly modify
        prescribing practices
   viii. Participate actively in quality improvement practices pertaining to patient care (e.g.,
        morbidity and mortality conferences)
   ix. Review autopsy findings to understand illness and the care critically ill patients
   x. Demonstrate improvement in clinical management by continually improving on their
       various rotations

b. 2nd Year fellows should additionally:
   i. Use self-assessments of knowledge, skills and attitudes to develop plans with insight
      and initiative for addressing areas for improvement
   ii. Voluntarily plan learning experiences in procedures not yet mastered
   iii. Use unique cases seen in a rotation to self-assess performance patterns

c. 3rd Year fellows should additionally:
   i. Analyze personal practice patterns systematically, and seek to improve patient care
   ii. Utilize ambulatory practice data to actively improve practice and patient
       management
   iii. Compare personal practice patterns to larger populations and seek to improve
       disparities in own patient care.

3. Information Technology: Using information technology to manage information, access on-line
   medical information; and support their own education
   a. 1st Year fellows should be able to:
      i. Use the Logician EMR, web-based curricular modules, handheld computers, and
         web-based resources to access medical literature and data to support and enhance
         patient care.
   b. 2nd Year and 3rd Year fellows should additionally be able to:
      i. Independently use Pubmed or Ovid and other computerized connections to primary
         literature to enhance patient care

4. Teaching: Facilitation of learning of students, residents, fellow colleagues, and other health care
   professionals
   a. 1st Year fellows should be able to
      i. Facilitate learning of students, residents and other 1st year fellows
   b. 2nd Year fellows should additionally:
      i. Facilitate education of students, residents and other 1st year fellows, as well as
         other health care Professionals
      ii. Demonstrate evidence based independent research and preparation when teaching.
      iii. Use interactions with nursing staff and other professionals as two-way educational
           opportunities
   c. 3rd Year fellows should additionally:
      i. Facilitate education of students, residents and other 1st Year and 2nd Year fellows,
         as well as other health care Professionals
      ii. When acting as a consultant, identify the questions and wishes of the physician
requesting the consultation, and respond to these issues.

iii. Present a topic at Fellow Board Review with a lecture and prepare a short test for their peers.

iv. Present a formal Cardiology Grand Rounds Lecture on a topic in their area of choice.

Interpersonal and Communication Skills Objectives

1. 1st Year fellows:
   a. Communication: 1st Year fellows should:
      i. Provide thorough yet succinct oral presentations regarding patient care, using appropriate medical terminology;
      ii. Provide thorough and complete written or electronic documentation of patient care (e.g., progress or procedure notes, history and physical exams, consultant notes, discharge summaries), which are legible, timely and use appropriate medical terminology.
      iii. Demonstrate proficiency in use of verbal and nonverbal skills in interactions outside of the context of patient care.
   b. DPR: 1st Year fellows should be able to establish rapport with patients from a variety of backgrounds; perform a medical interview that elicits both patient- and physician-centered information, as well as testing diagnostic hypotheses; and effectively communicate uncomplicated diagnostic and therapeutic plans to patients or their advocates.
   c. Ethically sound relationships: 1st Year fellows should follow those tenets of ethics in patient care. Please refer to the Professionalism Competency Curriculum.
   d. Working within teams: 1st Year fellows should be able to work as team members with senior fellows and attending physicians, including the communication skills outlined above and the coordination of patient care. When supervising medical students, first year fellows should be able to observe students, demonstrate skills, and give constructive feedback. 1st Year fellows should be able to communicate effectively with ancillary staff to enhance patient care.

2. 2nd Year fellows: The successful 2nd Year fellow meets all 1st Year fellow learning objectives and in addition, has further mastered the following:
   a. Patient Communication: 2nd Year fellows should be able to engage patients in shared decision making for ambiguous or controversial scenarios, and conduct family meetings as in the setting of end of life decision making. They should be able to successfully negotiate most “difficult” patient encounters, such as the irate patient.
   b. Team Work: Second year fellows should progressively assume a leadership role, facilitating interactions between team members. This includes establishing expectations, overseeing patient care, ensuring participation in academic discussions, etc.

3. 3rd Year fellows: The successful 3rd Year fellow meets all 2nd Year fellow learning objectives and in addition, has further mastered the skills below:
   a. Patient Communication: Third year fellows should be able to successfully negotiate nearly all “difficult” patient encounters with minimal direction.
   b. ii. Team Work: Third year fellows should function as team leaders with decreasing reliance upon attending physicians. They should also be able to function as a consultant (including completion of appropriate documentation and verbal communication with the requesting physician).
## Professionalism Expectations

<table>
<thead>
<tr>
<th>Virtue</th>
<th>Skill, Behavior, or Attitude</th>
<th>1st Year Expectation</th>
<th>2nd Year Expectation</th>
<th>3rd Year Expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competence</strong></td>
<td>Administrative competence (punctual, completes tasks as asked, follows directions, timely response to staff needs including pages and abnormal lab results, follows up on patient care prompting).</td>
<td>Essential</td>
<td>Essential</td>
<td>Essential</td>
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<tr>
<td><strong>Self directed learning</strong></td>
<td>Expected (e.g. reads about patients)</td>
<td>Expected</td>
<td>Expected (i.e. spontaneously presents literature and evidence related to patient care)</td>
<td>Expected (i.e. spontaneously presents literature and evidence related patient care)</td>
</tr>
<tr>
<td><strong>Able to deliver bad news</strong></td>
<td>Appreciated</td>
<td>Expected</td>
<td>Essential</td>
<td>Essential</td>
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<tr>
<td><em><em>Understands and competent to work with patients regarding advanced directives, DNR status, futility, withholding</em> or withdrawing</em> therapy.**</td>
<td>Appreciated</td>
<td>Expected</td>
<td>Essential</td>
<td>Essential</td>
</tr>
<tr>
<td><strong>Able to assess and use informed consent and provision of care</strong></td>
<td>Expected</td>
<td>Essential</td>
<td>Essential</td>
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<tr>
<td><strong>Honesty</strong></td>
<td>Tells the truth and is trustworthy</td>
<td>Essential</td>
<td>Essential</td>
<td>Essential</td>
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<td></td>
<td>Makes honest</td>
<td>Essential</td>
<td>Essential</td>
<td>Essential</td>
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<tr>
<td>Use of coding, billing, and referral principles.</td>
<td>Essential</td>
<td>Essential</td>
<td>Essential</td>
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<tr>
<td>Understands and appropriately maintains patient confidentiality*</td>
<td>Essential</td>
<td>Essential</td>
<td>Essential</td>
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<tr>
<td>Compassion</td>
<td>Fellow’s attitude manifests an interest in helping providing compassionate*, quality care to all patients</td>
<td>Essential</td>
<td>Essential</td>
<td>Essential</td>
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<tr>
<td>Respect for Others</td>
<td>Demonstrates respect and compassion for all patients*</td>
<td>Essential</td>
<td>Essential</td>
<td>Essential</td>
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<tr>
<td>Professional Responsibility</td>
<td>Understands and compassionately responds to issues of culture, age, sex, sexual orientation, and disability in patient care.</td>
<td>Appreciated</td>
<td>Expected</td>
<td>Essential</td>
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<tr>
<td>Professional Responsibility</td>
<td>Recognizes that physicians have a responsibility for the safety and well being of patient, colleagues, and staff;</td>
<td>Essential</td>
<td>Essential</td>
<td>Essential</td>
</tr>
<tr>
<td>Professional Responsibility</td>
<td>Understands that there are moral and ethical concerns about receiving</td>
<td>Appreciated</td>
<td>Expected</td>
<td>Essential</td>
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<tr>
<td>gifts from patients and pharmaceutical representatives.</td>
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<tr>
<td>Able to discuss and defend own ethical understanding of his or her relationship with pharmaceutical representatives.</td>
<td>Appreciated</td>
<td>Expected</td>
<td>Essential</td>
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<tr>
<td>Willing to provide overage for sick/unavailable colleagues</td>
<td>Expected</td>
<td>Expected</td>
<td>Expected</td>
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<tr>
<td>Demonstrates intellectual curiosity</td>
<td>Appreciated</td>
<td>Expected</td>
<td>Expected</td>
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<tr>
<td>Spontaneously teaches and exhibits concern for the educational development of fellow fellows and students</td>
<td>Appreciated</td>
<td>Expected</td>
<td>Essential</td>
<td></td>
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<tr>
<td>Provides leadership on teams and in the residency.</td>
<td>Appreciated</td>
<td>Expected</td>
<td>Expected</td>
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<tr>
<td>Understands that in the patient-physician relationship, the physician’s prime concern is the patient’s interest and not his or her own. (A fiduciary relationship)</td>
<td>Expected</td>
<td>Essential</td>
<td>Essential</td>
<td></td>
</tr>
<tr>
<td>Social Responsibility</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Volunteers for activities that are for the “good of the institution”</td>
<td>Appreciated</td>
<td>Expected</td>
<td>Expected</td>
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</tbody>
</table>
Systems Based Practice Objectives

Fellows must demonstrate awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value. Fellows are expected to:

1. Reflect on how their patient care and other professional practices affect other Health care professionals, the health care organization, and the larger society and how these elements affect their own practice.
   a. By completion of the 1st year, fellows should display ability to work well within their core clinical team, including other fellows/respiratory therapists/other professionals involved in the care of their patients.
   b. By completion of the 2nd year, fellows must also be able to work well with multidisciplinary teams, coordinating multi-specialty care and effectively working with case management and nursing in team settings such as family meetings and large team discussions. By completion of the 2nd year, fellows must be able to provide and document care in a timely and thorough manner to facilitate analysis of practice patterns and use of information by other health care professionals.
   c. By completion of the 3rd year, fellows should also strive to effectively coordinate care with other health care professionals as needed, and should strive to provide leadership role in management of complex care plans. By completion of the 3rd year, fellows should also reflect understanding of external regulations and expectations and appropriately acknowledge effects of these elements on their own practice.

2. Know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources.
   a. 2nd year fellows-By completion of the 2nd year, fellows should demonstrate a level of understanding regarding medical delivery systems, including alternative care resources, ambulatory care resources, rehabilitation resources, and other continuing resources. Fellows should also have a satisfactory understanding of methods of controlling health care costs and appropriate allocation of resources.
   b. 3rd year fellows -By completion of the 3rd year, fellows should demonstrate a high level of understanding regarding medical practice and delivery systems, including methods of controlling health care costs and appropriate allocation of resources.

3. Practice cost-effective health care and resource allocation that does not compromise quality of care.
a. By conclusion of the 1st year, fellows must reflect sensitivity to costs and be able to incorporate fundamental cost-effective analysis into care approaches, minimizing unnecessary care.
b. By completion of the 3rd year, fellows should also strive to appropriately contain costs and conserve limited resources while reserving a high quality of care.

4. Advocate for quality patient care and assist patients in dealing with system complexities.
   a. By completion of the 1st year, fellows must identify, implement, document, and monitor established local patient care plans consistent with nationally published clinical practice guidelines. Throughout the 1st year, fellows must demonstrate dedication to high quality patient care.
   b. By completion of the 2nd year, fellows must also demonstrate ability to effectively guide patients through the complex health care environment.
   c. By completion of the 3rd year, fellows should also be capable of acting as a team leader during interdisciplinary Family Meetings regarding complex patient care needs.

5. Know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance.
   a. By completion of the 1st year, fellows must demonstrate ability to regularly and effectively work with the academic case manager, social workers, and other health care professionals to assess, coordinate, and improve patient care. The fellow should reflect understanding of the benefits of such partnering activities on the operation of the health care system.
   b. By completion of the 2nd year, fellows must also demonstrate ability to regularly and effectively work with other case managers, utilization review personnel, physician assistants, ambulatory practice office managers, and other providers within the larger health care system.
   c. By completion of the 3rd year, fellows should also be able to partner with case managers and other providers to identify and capitalize on improvement opportunities for the health care system.
LINES OF RESPONSIBILITY

Responsibilities unique to each individual rotation are outlined in the curriculum section for that rotation.

1. **Inpatient Services:**
   
   a. Supervising Physician: The staff physician is responsible for the assignment of patient care and for supervision of the fellow's management of the patients on the inpatient and outpatient services. The staff physician will review the rotation expectations at the beginning of the rotation. The attending physician will provide verbal feedback and a written evaluation at the end of each rotation. The attending physician will conduct daily management rounds which will include brief bedside focused discussion. The staff physician will be readily available and easily contacted by the fellow to discuss patient care or other issues related to the rotation.

   b. Cardiology Fellow: The cardiology fellow is responsible for the daily management of all patients on the cardiology service to which the fellow is assigned. The consult fellows will receive and triage all consult requests and begin the initial management of these patients. The fellow will assist the house staff in performing necessary procedures. The fellow will either provide adequate documentation of patient care or ensure that house staff notes are complete and accurate. The fellow will supervise all house staff members on his or her assigned team.

2. **Outpatient Continuity Clinic:**
   
   a. Supervising Physician: The attending physician will supervise the management of all cardiology clinic patients. All new patients and follow up patients will be presented to the attending physician and written documentation of the encounter will be placed in the chart. The attending physician will provide verbal feedback and a written evaluation twice a year.

   b. Cardiology Fellow: The cardiology fellow is responsible for evaluating, managing, and providing follow-up care for his or her assigned cardiology clinic patients under the supervision of the staff physician in the clinic. The fellow is responsible for providing appropriate documentation on all patient encounters. The fellow is expected to answer clinic staff and patient phone calls in a timely fashion.

3. **Laboratory Rotations:**
   
   a. Supervising Physician: The staff physician is responsible for the supervision of all procedures performed in the individual cardiology laboratories. The staff physician will assign specific fellow duties based on the individual fellow’s level of training and expertise. The staff physician will outline the rotation expectations at the beginning of the month. The staff physician will provide verbal feedback and a written evaluation at the end of the month. The staff physician will monitor the fellow’s performance of procedures and review the fellow’s interpretation of all diagnostic tests. The staff physician will provide concise focused teaching sessions during weekly conferences or during performance and interpretation of laboratory studies. The staff physician and/or the fellow will discuss testing results with the patient and the patient’s family and provide appropriate documentation.

   b. Cardiology Fellow: The cardiology fellow will perform all required pre-procedure duties (ensure appropriate consent obtained, review labs, write pre-procedure orders, etc).
fellow will supervise all non-invasive testing and remain in the lab area to be available for emergencies. If the fellow must leave the area, the lab staff must be notified who is the appropriate contact person for emergencies. Fellows will perform invasive procedures under the supervision of the attending physician in accordance with their level of training and expertise. The fellow is responsible for any necessary post-procedure care. The staff physician and/or the fellow will discuss testing results with the patient and the patient’s family and provide appropriate documentation.

4. Call:

   a. Supervising Physician: A list of staff physicians on call for the various services including consults, cath lab, electrophysiology, echocardiology, Bergan consults will be distributed at the beginning of each month. The attending physician must be easily reached by either pager or phone to staff overnight consults, discuss critically ill inpatients, or to come in to directly supervise invasive procedures (TEE, cardiac catheterization, etc).

   b. Cardiology Fellow: Each night, there is one fellow on call for the Creighton University Medical Center and Bergan. Interventional cardiology call is covered by the subspecialty interventional cardiology fellow. The cardiology fellow on call is responsible for providing consultation to all services (including ER, inpatient medical and surgical services). The Creighton University Medical Center cardiology fellow on call will come in and evaluate any urgent consults or critically ill inpatients and discuss the management plan with the staff physician on call. Weekend call coverage for the Creighton University Medical Center is provided mostly by first year and second year fellows. Weekend call coverage for Bergan call is provided by second year and third year fellows. The fellows will perform any urgent non-invasive procedures and provide the initial interpretation under the supervision of the attending physician. The fellow will perform emergency invasive procedures in accordance with his or her level of training and expertise under the direct supervision of the staff physician. The fellow will provide adequate documentation to fully relay the management plan and any procedure results to the team responsible for the patient’s care.

5. Non-Teaching Patients:

In the event of a life-threatening emergency, the cardiology fellow will be responsible for the care and stabilization of “teaching” and “non-teaching” patients alike. If there is a difference of opinion over the management plan for “non-teaching patients”, the patient’s attending physician will be responsible for all subsequent evaluation, management decisions, and order writing that is necessary. Currently, “non-teaching” patients are only those who are post-procedure (either from the EP or from the interventional laboratory) or are low risk patients (e.g. exclude acute coronary syndrome, completion of a prolonged course of antibiotic or those receiving oral anticoagulation). These patients are managed by the cardiology nurse practitioners who are supervised by a designated staff physician. The weekend and weeknight coverage is provided by the nurse practitioner and/or the designated staff physician.
FELLOWSHIP RESPONSIBILITIES

GENERAL FELLOWSHIP RESPONSIBILITIES

Responsibilities specific to individual rotations are described in each rotation's curriculum. General responsibilities that apply to the daily performance of fellowship duties will be listed in this section.

1. In general, daily work hours are from 8:00 am to 5:00 pm Monday through Friday. Obviously, work hours will vary based on the required duties of each rotation. Fellows on inpatient services with early morning rounds will need to arrive at a time that allows adequate preparation for rounds. Fellows on procedure rotations are expected to arrive in time to evaluate the patient prior to starting the planned procedure.
2. Fellows will provide timely, safe, and effective care for all patients he/she is responsible for.
3. Fellows will document all patient care in the medical record in a timely fashion.
4. Fellows will attend and be on time to all scheduled cardiology teaching conferences and initial attendance documentation sheet. These functions include, but are not limited to rounds, fellows' clinics, and conferences. Except in instances involving emergent patient care, faculty will excuse fellows from other duties to ensure attendance at these functions.
5. Fellows will review each rotation's curriculum with the attending at the beginning of the month and strive to achieve the outlined goals and objectives.
6. Fellows will keep an accurate and up-to-date procedure log. This log will be reviewed at each 6 month evaluation with the program director.
7. Fellows will review the call schedule and perform all call duties as scheduled. If fellows switch call, the appropriate staff must be notified.
8. Fellows are expected to carry their pagers at all times while on duty and to respond to pages in a timely fashion.
9. Fellows are expected to supervise and teach all house staff members on his/her team.
10. Fellows are expected to communicate with the attending physician, house staff members of the team, the patient, and family members as frequently as is necessary to facilitate excellent patient care. This includes discussing urgent issues that arise on call with the on-call attending.
11. Fellows will check out all critically ill patients, pending test results, and other pertinent information to the on-call fellow prior to leaving for the day.
12. Fellows will comply with the program's duty hour guidelines and report any problems with compliance to the program director. This includes not exceeding duty hours due to excessive moonlighting.
13. Fellows will notify the Program Director, Program Coordinator and Chief Fellow of any unplanned absence in order to ensure that continuity clinics are cancelled and rescheduled appropriately and that rotation/call duties are covered. Coverage for scheduled vacation and conferences will be arranged two months prior to leave.
14. Fellows will conduct themselves in a professional manner at all times and will treat all others, including colleagues, faculty, residents, medical students, ancillary staff, referring health care providers, and patients and their families, with the utmost respect.
15. Fellows will develop a personal self-study program that is guided by the fellowship curriculum.
16. Fellows will adhere to all Creighton University GME-related policies.
17. Fellows will adhere to all Creighton University Medical Center and Bergan Medical Center Institutional policies.
18. Fellows will complete all rotation, faculty, and program evaluations in an honest, constructive, and timely fashion.
19. Fellows will comply with the licensure requirements of the State of Nebraska, ACLS, BLS, staff
health requirements and VISA if applicable. Should any licensure or mandatory testing become delinquent, it is the responsibility of the fellow to renew in an expedited manner. If licensure is not kept current, the fellow employment contract will be considered null and void.

20. Fellows will comply with all state and federal laws governing the practice of medicine.
21. Fellows will abide by the institutional order writing policy.
22. When a fellow has a clinic obligation, he/she must arrange for another fellow/resident to cover any service until his/her clinic obligation is complete. The clinic obligation has priority over all other responsibilities that might conflict with clinic.
23. The cardiology faculty attending is ultimately responsible for the performance of all cardiovascular procedures, including their prompt termination when he or she deems it necessary. The amount of time and degree of independence allotted a fellow for the safe and efficacious completion of a procedure will be determined solely by the faculty attending on a case-by-case basis.
24. Fellows who perform procedures on patients have the responsibility to acquaint the patient with the steps involved in procedure preparation and performance, inform the patient of associated risks and obtain the patient’s signature on a consent form. The physician obtaining consent must date, time, and sign each form. It is desirable that fellows who perform a given procedure also obtain informed consent.
25. It is the responsibility of the fellow to notify the education coordinator in the event they are sick. Thirty calendar days of sick leave are provided per year. (These days may not be carried over into the following year.) Use of sick leave is permitted for personal or family illness and/or doctor's appointments. Maternity/Paternity leave is considered as sick leave.
26. It is the fellow's responsibility to complete a Vacation/Education form (obtained from the fellowship office) 2 months prior to any absence. This form will indicate appropriate coverage and must be signed and approved prior to departure. This policy will be strictly enforced and disciplinary action will be taken in the event of non-compliance.
27. Fellows submitting an abstract for consideration need to first discuss travel and funding with the Program Director and research coordinator. If division funds are requested the fellow must have his/her abstract reviewed by the research coordinator.
28. Fellows should not apply to attend a meeting (or submit an abstract to a meeting) unless they have first discussed with the program coordinator.

CALL DUTIES

1. Call begins at 5 pm and ends at 8 am on weekdays. Saturday and Sunday call is from 8 am to 8 am.
2. Each day there is one fellow on call for the Creighton University Medical Center. Bergan Medical Center call is shared by the fellow and a resident. Interventional call is covered by the interventional fellow.
3. Any fellow that is on call and up all night is sent home the next morning after transfer of care.
4. Each day will have an assigned attending on call to discuss consults. One interventional attending will be on call to cover the cath lab. The attending call schedule will be published at the beginning of each month.
5. The official daily and yearly call schedule is distributed to all Cardiology areas. Any call changes should be marked on this schedule, and the appropriate staff at the facility should be notified.
6. A call room is available on the 4th floor of the Creighton University Medical Center for fellows on general cardiology call.
7. Fellows will see all urgent consults on call and page the responsible attending to discuss the plan of care.
8. Fellows will provide assistance to the residents on call at Creighton University Medical Center and to the resident at the Bergan Mercy Medical Center as needed to help manage critically ill patients.
and new admissions. Fellows are expected to come in to see any critically ill patient.

9. Fellows will assist with vascular access, PA catheter placement, elective cardioversion, and transthoracic echocardiography as needed. Once an individual fellow has received the requisite training and has been deemed competent in performing these procedures, he/she may perform the procedures without a senior level fellow or attending directly present. The results of procedures are discussed and reviewed with the appropriate attending. Advanced procedures, including diagnostic cardiac catheterization, transvenous pacemaker placement, coronary angiography, TEE, and RV biopsy are performed only under direct supervision of the attending.

10. The fellows on call Saturday and Sunday for the Creighton University Medical Center and Bergan Mercy Medical Center will follow-up with new consults and any existing consults from the week. They are also responsible for all EP consults, urgent TTEs, rounding with the attending on consults, and taking overnight call.

3-DAY HOLIDAY WEEKENDS

1. In general, Monday should be treated in the same manner as Saturday or Sunday.

CARDIOLOGY CHIEF FELLOW RESPONSIBILITIES

The Chief Fellow is a 3rd Year fellow assigned administrative duties related to the training program that are in addition to usual fellow duties.

These responsibilities include:

1. Provide leadership at the fellow level.
2. Serve as liaison between the general cardiology fellows and the fellowship program director and division director.
3. Attend divisional faculty meetings to represent fellow interests and to discuss issues and changes in the fellowship program.
4. Prepare the yearly call and rotation schedules in conjunction with the fellowship program director. This will include coordinating requests for vacation and meetings, as well as approving and arranging schedule modifications throughout the year.
5. Arrange rotation and call coverage for unplanned absences.
6. Serve as the first point of contact for fellow problems.
7. Serve as a role model to encourage fellow conference attendance.
8. Assist with supervision of junior fellows.
9. Assist program director with developing an orientation schedule for new fellows, including any introductory lecture series.
10. Assist program director with updating core curriculum and ensuring all elements covered on a rotating two-year basis.
11. Assist with the selection of new fellows (recruiting, screening applications, interview process).
12. Participate in appropriate GME meetings with the Internal Medicine department.
13. Be responsible, in conjunction with the program director, for fellow compliance with call schedule and other fellowship duties.
14. Help coordinate conferences requiring direct fellow participation/presentation including board review conference series.
15. Review and assist with the selection of Journal Club articles.
ROTATION COVERAGE

Division of Cardiovascular Diseases Fellows’ Coverage Policy

The coverage policy has been developed to allow for continuous patient care without any disruptions due to emergency situations. The protocol for coverage has several features to allow for adequate coverage in all situations. Fellows requiring coverage on an immediate basis must themselves be involved in an emergent, unforeseeable incident that could not have been otherwise prevented. These events will require the requesting fellow to contact the chief fellow either in person or via phone and discuss the specifics of the coverage options. When the decision has been made by the chief fellow to grant coverage, the name of the available coverage fellow will be provided. For situations where the requesting fellow is incapable of contacting the coverage fellow, the chief fellow will assist. Otherwise, it is then the responsibility of the fellow who is requesting coverage to contact the coverage fellow either in person or via phone and discuss the specifics of the coverage requirements. Also, it is the responsibility of the fellow requiring coverage to provide full details regarding pertinent patient care issues either over the phone or via email to the covering fellow.

The pool of fellows available to cover will depend on the time of day coverage is required and the rotations from where fellows can be withdrawn. The chief fellow and fellowship coordinator will determine which fellows will be pulled for coverage.

Fellows will not be allowed to take a vacation or go to any conferences without 60 day advance notice signed by the fellowship program coordinator and fellowship program director and division director. For medical emergencies that require week-long coverage on services, the responsibility may be split between two or three fellows and this will be at the discretion of the chief fellow.

The above policies are meant to serve as guidelines to be as fair as possible to all fellows. Minor adjustments in the enforcement of the above policies will be at the discretion of the chief fellow, fellowship program coordinator and fellowship program director. Issues of concern with regard to this policy may be periodically reviewed and refined to suit the needs of the fellowship program.
RESEARCH/PRESENTATIONS

Cardiology trainees are expected to take an active role in clinical and basic science research during the period of fellowship training. Research mentorship is initiated during the first year of clinical training to help guide the trainee towards a clinical research experience related to his field of clinical sub specialty, or to a basic science laboratory and specific mentor in anticipation of an investigative career in cardiovascular diseases. The program makes scholarship a high priority and strongly encourages presentation of original research at a national meeting, completion of original research which is published in a peer reviewed journal or substantial scholarly work related to cardiology. Guidance in planning research directions with the trainee is provided by the Academic Affairs Committee members and the Research Director. Research is supervised directly by the individual faculty mentor.

During the first year of training, fellows are exposed to the spectrum of research opportunities available within the Division of Cardiovascular Disease and outside the division. This is an important learning exercise in terms of formulating a hypothesis, learning the tools necessary to answer a significant question, and analyzing the pertinent literature. Under appropriate circumstances, the fellow will apply for research funding from the American Heart Association – Heartland Affiliate or the Interdisciplinary Research Fund available through the Cardiovascular Research Center other organizations (e.g. HRS) during the fall of the first year. Support and critique will be provided by members of the Research Committee and a faculty mentor. Fellows are encouraged to present their research at national meetings including those of the American Heart Association, the American College of Cardiology, and other major regional or national societies.
EVALUATIONS

Evaluations are an important part of training that should occur frequently and provide constructive feedback. The purpose of frequent evaluation is to ensure that fellows learn and grow commensurate with their level of cardiology training. In addition, evaluations help identify potential problems early so that issues can be addressed before they become irreparable and adversely affect the fellow’s ability to function as a well-rounded cardiologist. It is extremely important that the supervising staff physicians outline the goals and objectives at the beginning of each rotation and provide fellows with feedback during the mid point of the rotation. Performance evaluation is based on the standard ACGME core competencies and the goals and objections for each rotation set forth by the fellowship curriculum.

1. At the end of each monthly rotation, the attending physician will provide verbal feedback and a written evaluation and will be electronically signed off by the fellow. These evaluations will be reviewed with the program director at the 6 month evaluation. If the fellow disagrees with the evaluation, it can be discussed with the program director.

2. Quarterly, the clinic preceptors will provide a written evaluation of each fellow’s clinic progress.

3. After completion of a rotation the fellows will evaluate the fellowship rotation that has been completed. These evaluations will be used to determine if the curriculum goals and objectives are being met as outlined and to solicit suggestions from fellows as to how training can be improved.

4. Twice a year, the program director will meet with each fellow review the fellow’s overall progress. The fellow’s monthly evaluations, procedure log, conference attendance, and duty hour compliance will be reviewed. In addition, the fellow’s long-range plans will be discussed to ensure that the fellow’s rotation structure will allow the fellow to achieve his/her goals. A written summary of the review will be provided by the program director, reviewed and signed by the fellow, and placed in the fellow’s file. If the fellow disagrees with the evaluation; it can be discussed with the fellowship program director or the director of the division of cardiology.

5. 360° evaluations will be performed monthly by rotation staff and quarterly by clinical staff.

6. Fellows will complete an anonymous evaluation of the supervising staff physician for every rotation. These evaluations are collected and reported to the chairman, department of medicine and the division director and ultimately back to the individual staff physician.

7. Fellows will complete an anonymous evaluation of the fellowship program yearly.

8. The program director will write a final evaluation for each graduating fellow. The program director evaluation will confirm the fellow’s ability to function independently as a practicing cardiologist.