Duke Residency Program in Cardiothoracic Surgery

Candidate Guide 2016-2017
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Dear Applicant:

We would like to welcome you to Durham on behalf of the Division of Cardiothoracic Surgery. We are grateful for your interest in the Residency Program in Thoracic Surgery at Duke and hope that over the course of your interview experience, you come away with shared enthusiasm about our Program.

This brochure has been provided to assist you in this most important process of selecting a Training Program. Within the pages you will find information regarding the history of Duke's medical campus and the Department of Surgery as well as summaries regarding current faculty and residents, recent graduates, and hospitals.

It is our educational mission to train cardiothoracic surgeons who are of the highest clinical caliber and who are committed to careers in which they will continue to advance the field of surgery through research, education, and leadership activities. We are dedicated to providing an environment in which exceptional individuals of diverse backgrounds are welcome and positioned to succeed.

There are clearly a number of factors to be considered when choosing a training program. It is our opinion that one of the most important is the track record of recent graduates. Our program is intentionally broad-based and has produced graduates with a wide variety of clinical and research interests. As you will find in the summaries enclosed, Duke graduates obtain the most highly sought-after academic jobs and specialty training fellowship programs.

We encourage you to take the opportunity to truly explore the opportunities present at Duke. If we can provide any further information to assist you in this process, please do not hesitate to contact any one of us.

Sincerely yours,

Peter K. Smith, M.D.
Professor of Surgery
Chief, Division of Cardiothoracic Surgery

Betty C. Tong, M.D., M.H.S.
Associate Professor of Surgery
Associate Program Director, Thoracic Surgery

Thomas A. D'Amico, M.D.
Professor of Surgery
Program Director, Thoracic Surgery

John C. Haney, M.D., M.P.H.
Assistant Professor of Surgery
Assistant Program Director, Thoracic Surgery
Duke University Medical Center History

1891
Trinity College President, John Franklin Crowell, made public a plan for starting a medical college with a teaching hospital at Trinity College.

1924
James B. Duke established The Duke Endowment and directs that part of his $40 million gift be used to transform Durham's Trinity College into Duke University.

1925
James B. Duke makes an additional bequest to establish the Duke School of Medicine, Duke School of Nursing, and Duke Hospital, with the goal of improving health care in the Carolinas and nationwide.

1927
Construction begins on the Medical School and Duke Hospital.

1929
Three thousand applicants apply to the new medical school. Seventy first- and third-year students are selected, including four women.

1930
Duke Hospital opens July 20, 1930, attracting 25,000 visitors. Classes began in Hospital Administration, Dietetics, and Medical Technology on August 15th. The eighteen third-year and thirty first-year medical students began classes on October 2nd.

1931
The Duke School of Nursing's first class of twenty-four undergraduate students began classes on January 2nd.
Dedication ceremony for Duke Medical School and Hospital is held on April 20th.
Private Diagnostic Clinics were organized September 15th.
Duke University Medical Center History (continued)

1940
First wing added to Duke Hospital.
The 65th General Hospital was authorized as an affiliated unit of the Duke University School of Medicine on October 17th.

1957
Outpatient and Private Diagnostic Clinic plus Hanes and Reed private floors and operating rooms were opened.
The original Medical School and Hospital were renamed "Duke University Medical Center."

1966
New Hospital Entrance, the Woodhall Building, was opened.

1980
The new $94.5 million, 616-bed Duke Hospital was opened, bringing the total number of patient beds to more than 1,000.

1998
The Duke University Health System - an integrated academic health care system serving a broad area of central North Carolina - was officially created as Duke established partnerships with Durham Regional Hospital, Raleigh Community Hospital, and other regional health care providers. DUHS today includes three hospitals, ambulatory care and surgery clinics, primary care medical practice clinics, home health services, hospice services, physician practice affiliations, managed care providers and other related facilities and services.

2007
Future Duke University Health System expansion included the development of the Hospital Addition for Surgery Building.

2009
Duke University Health System (DUHS) moved forward with the construction of a dedicated, state-of-the-art Cancer Center and the new Duke Medicine Pavilion, a major expansion of surgery and critical care services at Duke University Hospital (DUH).

2012
On February 27, 2012, a new landmark opened its doors on Duke's medical center campus—the seven-story, 267,000-square-foot Duke Cancer Institute. More than just state-of-the-art space, it's an environment designed to transform the experience of every patient welcomed inside. The new Cancer Institute consolidates outpatient cancer services and clinical research from across the campus into a patient-centered, multidisciplinary center.

2013
The Duke Medicine Pavilion at Duke University Hospital, opened in July 2013. The Pavilion is an eight-story building of approximately 580,000 square feet, and includes 16 new operating suites, 96 critical care beds and 64 intermediate care beds. The operating suites feature the latest in surgical technologies, as well as intraoperative CT and MRI scanners. The 64 new intermediate care beds allow for optimal transition of patients from intensive care beds to standard hospital rooms.
The expanded Duke clinical facilities serve as a state-of-the-art training and education facility for the nearly 900 residents and fellows at Duke who comprise one of the largest training programs in the United States.
This major expansion project follows on several recent significant capital projects throughout Duke Medicine, including renovations at Duke Raleigh and Duke Regional hospitals, and the opening of several new clinics in Wake County (Brier Creek, Morrisville, Knightdale, and North Raleigh).
Duke Surgery

Department Chairmen

The rich history and high standards that bore Duke University are also deeply rooted within the Department of Surgery. Duke Hospital's first dean, Dr. Wilburt Davison, appointed a Johns Hopkins surgeon, Dr. J. Deryl Hart, to be Professor of Surgery and the first Chairman of the Department in 1930 (Dr. Hart had the unique privilege of having been selected by Dr. William Stewart Halsted to join the surgical training program at Johns Hopkins University). After stepping down as Chairman in 1960, Dr. Hart served as President of Duke University. During his tenure as Chairman, Dr. Hart expected faculty members to assume major clinical and teaching responsibilities and to pursue laboratory research. He recruited the founding members of the surgical faculty and established Duke's surgery residency. Dr. Hart is also credited with originating the use of ultraviolet radiation to control airborne infections in surgical operating rooms – a technique that, ultimately, was widely accepted across the country.

The emphasis Dr. Hart placed on achieving excellence in patient care and teaching by integrating research with development laid the foundation for an institution that remains one of the top medical centers in the country. His philosophy was central to the Department's mission in 1930 and continues to be so today. Under the leadership of the successive chairs -- Drs. Clarence E. Gardner (1960-1964), David C. Sabiston, Jr. (1964-1994), and Robert W. Anderson (1994-2003) the model system of integrating the fundamental missions of academic medical centers: patient care, education, research and administration, was enhanced within the Department of Surgery at Duke. Dr. Gardner was Dr. Hart's first Chief Resident and continued on as a Duke faculty member after completing his surgical training.

Dr. David C. Sabiston, Jr., a North Carolina native, completed medical school and surgical training at Johns Hopkins Hospital under the mentorship of Dr. Alfred Blalock. Although his accomplishments were many during this time, he distinguished himself in the field of cardiovascular diseases. Notable among his academic achievements were his pioneering work in the surgical management of coronary artery disease and, while at Duke, groundbreaking work in the diagnosis and management of pulmonary embolism. Despite these significant efforts, Dr. Sabiston will be remembered most for his profound effect on surgical education both nationally and internationally. This is most evident when reviewing the list of successful graduates who have gone on to lead departments, divisions, and programs, and whose portraits adorn the hallways outside of the department offices.
Duke Surgery Department Chairmen

continued

Dr. Robert W. Anderson followed Dr. Sabiston as chairman and returned to the site of his surgical training. Social and economic influences were rapidly altering academic medicine in 1994. Dr. Anderson, an accomplished cardiothoracic surgeon with additional training in business administration, successfully led a department seeded as the epitome of traditional education and training, research, and clinical excellence while addressing the major changes in practice reimbursement that had occurred. This leadership solidified Duke's fiscal stature and has facilitated a continued dedication to a tripartite mission of clinical, educational, and investigational achievement.

Dr. Jacobs was recruited to Duke in 2003 where he served as Chair until his departure in October 2012. Dr. Jacobs currently is the Executive Vice President, Provost and Dean of the School of Medicine at the University of Texas Medical Campus in Galveston. Over his nine years at Duke, Dr. Jacobs was highly committed to the success of all three missions within the Department of Surgery. He left Duke with the Department stronger than when he arrived and in a good position for his successor to continue the legacy of success that is Duke Surgery.

Dr. Allan D. Kirk was named Chair of the Department of Surgery at Duke University in May 2014. He also was named as the inaugural Surgeon-in-Chief for the Duke University Health System. Dr. Kirk received his M.D. from Duke University School of Medicine in 1987 and completed his Ph.D. in immunology at Duke in 1992. He completed his general surgery residency at Duke in 1995, and his multiorgan transplant fellowship at the University of Wisconsin in 1997. An accomplished scientist and surgeon, Dr. Kirk is recognized by his peers for his pioneering work in transplantation and for his outstanding ability to lead. Prior to returning to Duke, he served as a Commander in the United States Navy at the Naval Medical Research Institute, became the inaugural Chief of the Transplantation branch at the National Institutes of Health, and served as Vice Chair for Research for the Department of Surgery at Emory University. His commitment to rigorous education and training, innovative research, and the most advanced patient care make him an excellent leader for Duke Surgery.
History of Cardiothoracic Surgery at Duke

Dr. David C. Sabiston Jr. was one of the architects of the modern training program in cardiothoracic surgery. When he arrived at Duke in 1964, he established an integrated program in general and thoracic surgery, the model for the current integrated programs that have recently been approved by the American Board of Thoracic Surgery. Dr. Sabiston was a preeminent surgeon and surgical scientist, but many cite his most important accomplishment as the development of academic surgical training and his success in training academic surgeons. Over the years 1964-94, he trained 154 chief residents, of which 95 became cardiothoracic surgeons. Of these chief residents, 103 went on to academic positions, with 41 becoming either division chiefs or department chairmen. Finally, he was instrumental in the development of the careers of 4 subsequent Presidents of the American Association for Thoracic Surgeons.

In 1994, Dr. Peter K. Smith was named as the Chief of the Division of Cardiothoracic Surgery. In conjunction with the Program Directors and Faculty, Dr. Smith has continued the tradition of clinical and academic excellence that was fostered by Dr. Sabiston. While, the Program has been progressive and dynamic, with many changes over the years (including the abolition of in-hospital call), the mission of the Division—to train academic thoracic surgeons—had been promoted. Specifically, 30 of the most recent 35 graduates from our traditional program have successfully attained a position in academic surgery. In the future, the Program will continue to dedicate itself to Dr. Sabiston's tradition: the mission of training academic thoracic surgeons.

Duke General Thoracic Surgery

The Duke General Thoracic Surgery Program was one of the original Thoracic Track Training Programs, and we continue to lead in the training of academic general thoracic surgeons. The state of North Carolina has one of the nation’s highest incidences in both lung cancer and esophageal cancer, and Duke has the largest clinical Lung Cancer Surgery and Esophageal Surgery Programs in both the state and Southeast Region. Over the past 2 decades, the Program has also distinguished itself as a leader in minimally invasive thoracic surgery. Duke was the lead accrual site in the first multi-institutional clinical trial of thoracoscopic lobectomy, and our volume continues to be one of the highest in the country. Moreover, our clinical research program is unsurpassed—the majority of the faculty have advanced training in clinical research—and the program actively integrates our residents in clinical research, as evidenced by resident presentations at national meetings and publications. In addition to our minimally invasive lung cancer and esophageal cancer programs, we also have well-developed programs in robotics, benign esophageal disease, lung volume reduction, tracheal surgery, and interventional procedures (RFA, PDT, EMR, EBUS, EUS, laser, stents). Finally, as one of the largest programs in the Duke Cancer Institute, the Thoracic Oncology Program attracts patients from the Southeast and other regions in the country, as well as internationally.

Lung Transplantation Program

The Duke Lung Transplant Program was established in 1992 and has become one of the top lung transplant programs in the world. Since that time, over 1300 lung transplant have been performed. The program routinely performs more than 100 lung transplants per year and is projected to perform approximately 150 transplants this year. One-year survival is approximately 90% and is significantly better than expected (SRTR.ORG). The program has excellent outcomes in transplanting patients who have not historically been candidates for lung transplantation, such as people 70 and older, patients with cystic fibrosis whose lungs are colonized with resistant pathogens, patients with coronary artery and/or valvular heart disease, and critically ill people who require mechanical ventilation or ECMO (extracorporeal membrane oxygenation). The program has the highest transplant rate of any lung transplant program in the US. Patients have a median wait time of 12 days and mortality on the waitlist is uncommon. The primary focus of the program is on innovation that addresses the primary limitations in lung transplant: an inadequate supply of donor lungs, primary graft dysfunction and failure, and insufficient long-term survival of the patient and the lung allograft. Duke has been a pioneer in increasing the number of useable lungs including the use of ex vivo lung perfusion (EVLP). Translation of experimental data into the clinic has allowed Duke's primary graft dysfunction rate to be one of the lowest in the country. Sentinel observations at Duke have led to the understanding of the importance of environmental exposures to lung allograft injury, particularly aspiration events related to gastric reflux, has fundamentally altered care of lung transplant recipients. Tolerance trials have been initiated. The first successfully tolerant lung transplant recipient using cadaveric lung and bone marrow is now over 3 years out from her lung transplant and off all immunosuppression for over 2 years. The Duke program is focused on exceptional clinical care, innovation and the training of physicians and surgeons to be leaders in lung transplantation.
Duke Cardiac Surgery

The Cardiac Surgery program at Duke has a long and storied history beginning in the 1950’s with pioneering research in hypothermia which led to its universal adoption in the conduct of cardiopulmonary bypass. Coronary artery bypass grafting was introduced to our specialty by Dr. David C. Sabiston, Jr, and has been a cornerstone of our program. Two of our faculty (Wil Gay and Paul Ebert) developed and introduced cold potassium cardioplegia as the fundamental adjunct along with cardiopulmonary bypass for most cardiac surgical procedures performed today. Among many “firsts” achieved at Duke, valve replacement for endocarditis, valve resuspension in aortic dissection and the surgical treatment of cardiac arrhythmias stand out.

More than 30,000 cardiac operations have been performed at Duke, with the current annual rate being more than 1200. Of interest to applicants, Duke’s cardiac volume has increased over the past 5 years as we have differentiated specialty programs that match the needs of future surgeons. During the 1990’s, over 75% of our procedures were isolated CABG. Today, that figure is less than 30%, but still amounts to 400-500 procedures per year. We feel that this is an appropriate number for today’s training needs, and still perform more than 90% of CABGs with cardiopulmonary bypass support as resident cases.

The large number of isolated coronary bypass procedures has been replaced by equivalent numbers of valve, valve coronary, endovascular, aortic, cardiac/lung transplant and ventricular assist device procedures. We have several programs that are nationally and internationally recognized, and all of our programs are regional leaders. This change has been consistent with the changing demands of our specialty and there are no “gaps” in appropriate clinical training opportunities.

Cardiac surgery is almost always performed for longevity benefit, and its efficacy has been fundamentally supported by extensive clinical research. We have continued that tradition with the award of the Cardiothoracic Surgical Research Network award from the NHLBI in 2006, with continued funding as a primary site through 2018. Associated with this, we have been awarded an NHLBI Clinical Skills Development site award that funds Master’s degree training in clinical research. Each year, we have two scholars enrolled in clinical research, and they actively work with our Thoracic Residents in clinical research projects. Thoracic residents are thus able to actively participate in clinical research with appropriate support. Among many examples, Duke has published extensively in the area of treatment selection in coronary artery disease from our databank on more than 60,000 patients who have had cardiac catheterization and/or cardiac surgery. This dataset is unique in having a medical therapy component, and has long term mortality outcome as the key endpoint for hypothesis testing.

Duke Valve Surgery Program

The Duke Valve Surgery Program performs approximately 400 valve procedures annually, including 250 AVR, 30 Bentall, 125 mitral repair, 75 MVR, 70 AVR/CAB, 40 mitral/CAB, 30 tricuspid, 50 maze procedures, 100 minimally invasive mitrals including robotics, 60 minithoracore AVRs, 60 TAVR. Each resident finishes having performed and having competence in all of these standard open procedures, with numbers more than sufficient for thoracic or cardiac track boards. Residents have opportunity to perform more advanced minimally invasive procedures like robotic mitrals, mini-thoracotomy mitrals and AVRs, and TAVR based upon their interest and time spent on the service. A simulation laboratory and wet labs are being working into the residency to hone specific advanced technical skills. All residents finish with alternative cannulation, hybrid operating, and wire skills that will be needed for future procedures like percutaneous MVR and that are useful in high-risk open procedures like re-do cardiac surgery.

Heart Transplant Program

The Duke Heart transplant program was initiated in 1985. For the past decade, our volume has been consistently between 50 and 60 heart transplants per year. Duke is the largest heart transplant program in the southeast and usually one of the top five programs nationally for volume. Average wait times and survival outcomes are excellent and publically available on the SRTR registry website. Adult survival outcomes at one and three years post-transplant are better than expected national outcomes. Pediatric heart transplants are also performed at Duke with recent volumes ranging between 5-10 per year.

Mechanical Circulatory Support Program

The Duke MCS program has been in existence for approximately 15 years. Multiple types of devices for MCS are available at Duke for bridge to transplant, bridge to recovery and destination therapy. Implantable LVAD volumes
have exceeded transplant volumes at approximately 70 procedures per year. Duke was the leading enrolling site in the Heartware HVAD DT trial and the second leading enroller in the Heartmate II DT trial. Other clinical VAD trials which are active at Duke include: REVIVE IT, ROADMAP and the Recover Right Impella trial.

**Congenital Heart Surgery Program**

The Congenital Heart Surgery Program at Duke University Medical Center is a robust, nationally recognized clinical and research center. The annual congenital surgical volume includes over 250 pump cases and over 400 total cases per year, with approximately 85% being pediatric and 15% being adult congenital cases. We perform the entire spectrum of congenital heart operations. Our mortality is consistently lower, and our case complexity mix is consistently higher than the average reported by other centers. The program is supported by a dedicated 13 bed pediatric cardiac ICU in addition to the 16 bed PICU.

We have a long history of contributions in both basic and clinical research in pediatric cardiac surgery. We have been a core center in the NHLBI Pediatric Heart Network, and participate in a number of multicenter trials. In addition, the Duke Clinical Research Institute is the data coordinating center for the STS Congenital Heart Database. Numerous graduates of the Duke Thoracic Surgery Residency have gone on to become congenital heart surgeons, including eight who are current chiefs of their respective divisions.

The experience of the cardiothoracic surgery resident at Duke includes participation in all operative cases, management of the patients with the multi-disciplinary team in the ICU and on the wards, and participation in the weekly multi-specialty case conference that has been regarded as one of the most educational conferences in the program. At the current time we do not have a congenital heart surgery fellowship program. The operative experience for the resident is therefore undiluted and includes more than enough cases to satisfy all board requirements. The resident will gain experience as the operating surgeon on a variety of congenital heart defects, including re-operative cases. Overall the rotation provides a comprehensive overview of congenital heart surgery.

**Aortic Surgery Program**

The Duke Center for Aortic Disease was established in July of 2005 and has subsequently grown into one of the largest thoracic aortic surgery programs in the world performing over 200 major aortic operations annually, including more than 50 thoracic endovascular aortic repairs and over 100 cases utilizing deep hypothermic circulatory arrest each year. The Duke program is internationally recognized for pioneering work in the field of hybrid aortic repair with series of hybrid arch and thoracoabdominal repair among the largest in the world. Graduates of the Duke Cardiothoracic Training Program desiring to focus on Aortic Surgery during their 3rd year of training finish with extensive hands-on experience in all areas of thoracic aortic surgery including valve-sparing aortic root replacement, conventional Bentall and bio-Bentall root replacement, open and hybrid aortic arch replacement, endovascular and conventional open descending aortic replacement, as well as conventional and hybrid thoracoabdominal aortic aneurysm repair. Graduates of the program with an interest in Aortic Surgery also have the opportunity to spend time in the Aortic Disease Clinic where they gain valuable knowledge of pre- and post-operative evaluation and management of patients with thoracic aortic disease, including connective tissue disorders such as Marfan and Loeys-Dietz syndromes. Graduates also gain extensive experience in the interpretation of echocardiography and CT and MR angiography for the evaluation of aortic disease.

The Duke Thoracic Aortic Surgery Database is a prospectively maintained database containing records on over 1200 patients undergoing thoracic aortic surgery at Duke since 2005, and the Aortic Program has published over 60 peer-reviewed manuscripts with more than 100 regional, national, and international presentations since 2005 on various topics in thoracic aortic disease. Residents in the Duke program are major participants in this research with numerous national presentations and published manuscripts based on data from this database.

Duke is also a large referral center for transcatheter aortic valve replacement (TAVR) with high volume experience with both the commercially available Edwards Sapien and investigational Medtronic CoreValve devices, one of only a handful of centers in the U.S. with access to both devices, and currently ranks 3rd in overall enrollment in the Medtronic CoreValve trials. Current TAVR volumes at Duke are over 100 cases annually with further growth anticipated with the opening of the 2nd Duke Hybrid OR after the move to the Duke Medical Pavilion. All Duke Cardiac Surgery residents graduate with extensive experience in TAVR.
Training Program in Thoracic Surgery

Currently, there are three training programs in Thoracic Surgery at the Duke University Medical Center: the Integrated program, the Joint Training Program (4/3 program for residents who have started their General Surgery training at Duke and wish to train in Thoracic Surgery), and the traditional program. These training programs are designed to develop academic cardiothoracic surgeons. At the completion of their training, residents will demonstrate proficiency in all clinical aspects of cardiothoracic surgery and will have extensive experience and training in clinical research.

The traditional program, a 3-year program with 3 residents at each training level, provides for progressive responsibility and a balanced exposure to adult cardiac surgery, congenital cardiac surgery, and general thoracic surgery. The philosophy of the training program is predicated on the mentorship system, where each resident rotates on a service with 2-3 faculty members for 4 months, providing consistent, sustained relationships. Unique to our program, there are 2 VA hospital rotations, one in Durham and one in Asheville, where autonomy is optimized.

Clinical Rotations in Cardiothoracic Surgery (rotations are 4 months in duration)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Adult Cardiac (Duke)</th>
<th>General Thoracic (Duke)</th>
<th>Congenital Cardiac (Duke)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2</td>
<td>Adult Cardiac (Duke)</td>
<td>General Thoracic (Duke)</td>
<td>Adult Cardiac and Thoracic (Duke)</td>
</tr>
<tr>
<td>Year 3</td>
<td>Chief Resident-Duke (Elective rotation)</td>
<td>Elective (Duke or Away)</td>
<td>Elective (Duke or Away)</td>
</tr>
</tbody>
</table>

Curriculum

In addition to the clinical experience, a comprehensive didactic teaching schedule is emphasized, based on a 3-year defined curriculum including topics in medical knowledge, patient care, practice-based learning, systems-based practice, communication, and professionalism.

The faculty and residents participate in a comprehensive conference schedule, designed to optimize clinical experience, didactic teaching, and interactive learning.

General Thoracic Surgery Track

Residents in the General Thoracic Surgery track are integrated in a didactic, clinical and investigational program that is designed to optimize the development of a career in Thoracic Surgical Oncology and General Thoracic Surgery. This program provides for 16-20 months of General Thoracic Surgery (out of 36 months), including robust experience in both the operating room and the outpatient clinics.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>General Thoracic (Duke)</th>
<th>Adult Cardiac (Duke)</th>
<th>Congenital Cardiac (Duke)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2</td>
<td>General Thoracic (Duke)</td>
<td>Adult Cardiac (Duke)</td>
<td>Adult Cardiac and Thoracic (Duke)</td>
</tr>
<tr>
<td>Year 3</td>
<td>Chief Resident/Lung Transplant (Duke)</td>
<td>Elective (Duke or Away)</td>
<td>Elective (Duke or Away)</td>
</tr>
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</table>

Academic and Professional Development

Upon entering the Program, residents are assigned an advisor/mentor, who becomes integral to the clinical and academic development of each resident. The academic development of each of the residents in the training program is the responsibility of the mentor and the Program Director.

In order to enhance education improve the national exposure, each resident has the opportunity to attend one national meeting annually, at the expense of the Division. Each resident attends one of the major academic meetings, such as the AATS and STS. In addition, each resident has the opportunity to attend an additional meeting, such as a technical course or review course. These opportunities are in addition to any meeting in which the resident is participating as a presenter.

One of the most important features of the training program is the opportunity for elective rotations in the third year, in order to fully develop the clinical strengths and enhance the academic potential of each resident. In order to facilitate this process, the Division of Thoracic Surgery has established relationships with a number of other academic
programs nationally. The goal of the training program is the development of the *complete academic Thoracic surgeon*, competitive for all professional opportunities at the Assistant Professor level, with no requirement for future training.

**Clinical Research**
To promote the development of each resident as an academic surgeon, there is programmatic emphasis on excellence in clinical research. Some residents choose to participate in clinical research through the Duke Clinical Research Institute (DCRI), which houses one of the largest cardiovascular data banks in the world, as well as an array of professionals with expertise in clinical research, information technology, epidemiology, and biostatistics.

Upon completion of the training program, residents have the opportunity to complete multiple projects, with publications in major peer-reviewed journals. In addition, residents have access to resources related to the American College of Surgeons Oncology Group (ACOSOG) and the Cancer and Leukemia Group B (CALGB).

**Thoracic Surgery Residency Educational Conferences (Duke Hospital)**

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Conference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>6:30 PM</td>
<td>Residents’ Teaching Conference</td>
</tr>
<tr>
<td>Tuesday</td>
<td>9:00 AM</td>
<td>Lung Transplant Conference</td>
</tr>
<tr>
<td>Wednesday</td>
<td>6:00 AM</td>
<td>Attending Rounds</td>
</tr>
<tr>
<td>Wednesday</td>
<td>6:45 AM</td>
<td>M&amp;M</td>
</tr>
<tr>
<td>Wednesday</td>
<td>7:30 AM</td>
<td>Thoracic Surgery Grand Rounds</td>
</tr>
<tr>
<td>Wednesday</td>
<td>4:30 PM</td>
<td>Multidisciplinary Thoracic Oncology Conference</td>
</tr>
<tr>
<td>Thursday</td>
<td>7:00 AM</td>
<td>General Thoracic Surgery Conference</td>
</tr>
<tr>
<td>Friday</td>
<td>7:30 AM</td>
<td>Pediatric Cath Conference</td>
</tr>
</tbody>
</table>

**Thoracic Surgery Residency Educational Conferences (Durham VA)**

| Wednesday | 10:30 AM | VA Cath/Indications Conference         |

**Work-Hours**
The schedule is designed to adhere to all RRC Duty Rules, including every other weekend off duty.

There is **NO IN-HOSPITAL call.**
Clinical Programs

**Adult Cardiac Surgery**
- Myocardial Revascularization
- Valve Repair and Replacement
- Transcatheter Valve Replacement
- Minimally Invasive Cardiac Surgery
- Surgery for Atrial Fibrillation
- Robotics

**Aortic Surgery**
- Surgery for Aneurysms, Dissections
- Stent Grafting

**Surgery for Cardio-Pulmonary Failure**
- Heart Transplantation
- Ventricular Assist
- Pulmonary Transplantation
- ECMO

**General Thoracic Surgery**
- Lung Cancer
- Esophageal Cancer
- Mesothelioma
- Benign Esophageal Disease
- Minimally Invasive Thoracic Surgery
- Robotics
- Lung Volume Reduction Surgery
- Tracheal Surgery
- EBUS, RFA, PDT
- CT Screening

**Congenital Cardiac Surgery**
- Pediatric Congenital
- Adult Congenital

Affiliated Institutions

**Duke University Medical Center**
Consistently ranked as one of the top ten hospitals by US News & World Report, the 1,117-bed Duke University Hospital is a tertiary and quaternary care hospital. On its 210 acres, it is recognized as a model for hospitals of the future, with a Cancer Institute which opened in 2012 and a Medical Pavilion with state of the art operating rooms. The Medical Pavilion, which opened July 2013, is an eight-story building of approximately 580,000 square feet, and includes 16 new operating suites, 96 critical care beds and 64 intermediate care beds. The operating suites feature the latest in surgical technologies, as well as intraoperative CT and MRI scanners. The 64 new intermediate care beds allow for optimal transition of patients from intensive care beds to standard hospital rooms.

The Cardiothoracic Surgery Service draws patients from the across the Southeast, as well as from other national and international sites.
**Durham Veterans Affairs Medical Center**

The Duke training program is affiliated with the Durham VA Medical Center, a Deans’ Committed Veterans Affairs Medical Center. This is a 274-bed general medical and surgical facility is located across the street from Duke Hospital. The Durham VA provides general and specialty medical, surgical, psychiatric inpatient and ambulatory services, and is a major referral center for veterans in North Carolina, southern Virginia, northern South Carolina, and eastern Tennessee.

There, residents conduct preoperative evaluation, operative procedures, and postoperative care on all patients. With supervision provided by the academic faculty of Duke University Medical Center, the rotations at the Durham VA provide a balanced exposure to cardiovascular and thoracic surgery.
Cardiovascular and Thoracic Surgery Faculty
Cardiovascular and Thoracic Surgery Faculty Members

**Peter Smith, M.D.**
Professor of Surgery

**Title**
Division Chief, Cardiovascular and Thoracic Surgery

**Training**
MD, Duke University School of Medicine, North Carolina, 1977

**Residency**
Cardiovascular Research, Duke University Medical Center, 1987
Teaching Scholar, AHA Clinician Scientist Awardee, Duke University Medical Center, 1980–83

**Clinical Interests**
Adult cardiac surgery with emphasis on coronary artery disease and valvular heart surgery.

**Research Interests**
Dr. Smith is the principal investigator for the Duke site in the Cardiothoracic Surgery Clinical Trials Network (CTSN) and in recent years has focused on clinical research. Topics include comparing CABG alone to CABG with mitral repair for moderate ischemic mitral regurgitation, as well as FFR and angiographically guided CABG. An integration of clinical research, publications, and scholarship with the advancement of clinically effective thoracic surgery is the goal of his research activities.

**Thomas D'Amico, M.D.**
Gary Hock Endowed Professor of Surgery

**Title**
Vice-Chair of Surgery
Chief, Section of General Thoracic Surgery
Program Director, Thoracic Surgery

**Training**
MD, Columbia University College of Physicians and Surgeons, New York, 1987

**Residency**
Thoracic Surgery, Duke University Medical Center, 1987-1996

**Fellowship**
Thoracic Oncology, Memorial Sloan-Kettering Cancer Center, 1996

**Clinical Interests**
Lung and esophageal cancer; general thoracic and thoroscopic surgery; minimally invasive thoracic surgery; thoracic oncology; lung volume reduction; photodynamic therapy (PDT); laser bronchoscopy; bronchial and esophageal stents; molecular biology of lung and esophageal cancer.

**Research Interests**
Lung Cancer: (1) Role of molecular markers in the prognosis and therapy of lung cancer; (2) Genomic analysis lung cancer mutations. Esophageal Cancer: (1) Role of molecular markers in the prognosis and therapy of esophageal cancer; (2) Genomic analysis esophageal cancer mutations.
Mani A. Daneshmand, M.D.
Assistant Professor of Surgery

Training
MD, Albany Medical College (New York), 2004

Residency
General Surgery, Duke University Medical Center, 2004-2011
Thoracic Surgery, Duke University Medical Center, 2011-2013

Fellowship
Cardiothoracic Surgical Research, Duke University Medical Center, 2006-2008

Clinical Interests
Cardiac and lung transplantation, left ventricular assist devices, adult cardiac surgery,
mitral valve surgery, surgical treatments for end-stage congestive heart failure, aortic
valve surgery

Jeffrey G. Gaca, M.D.
Associate Professor of Surgery

Training

Residency
General Surgery, Duke University Medical Center, 1998-2005
Thoracic Surgery, Duke University Medical Center, 2005-2008

Clinical Interests
Adult cardiac surgery, thoracic aortic surgery, minimally invasive approaches to valvular
heart disease.

Donald Glower, Jr., M.D.
Professor of Surgery

Training
M.D., Johns Hopkins University, Maryland, 1980

Residency
Surgery, Duke University Medical Center, North Carolina, 1980-1987
Thoracic Surgery, Duke University Medical Center, North Carolina, 1987-1989

Clinical Interests
Minimally invasive valve and coronary surgery; valve repair and replacement; robotic
heart surgery; septal myectomy for hypertrophic obstructive cardiomyopathy; minimally
invasive maze procedure for atrial fibrillation.

Research Interests
Current clinical research projects examine the effects of patient characteristics and
surgical technique in outcome after minimally invasive cardiac surgery, valve repair and
replacement, and coronary artery bypass grafting.
Prior work has examined the role of surgical therapy versus medical therapy in aortic
dissection, load-independent means to quantify left and right ventricular function, and
management of complex coronary disease.
John Haney, M.D., M.P.H.
Assistant Professor of Surgery

Title
Assistant Program Director, Thoracic Surgery
MSII Core Course Director, Department of Surgery

Training
M.D., Duke University School of Medicine, 2004

Residency
Surgery, Duke University Medical Center, North Carolina, 2004-2011
Thoracic Surgery, Duke University Medical Center, North Carolina, 2011-2014

Other Training
M.P.H., Boston University, 2000

Clinical Interests
Adult cardiac surgery including coronary artery revascularization and valve surgery; lung transplantation; extracorporeal life support therapies for cardiac and respiratory failure; ex-vivo lung perfusion; and surgical treatment of chronic thromboembolic pulmonary hypertension.

David H. Harpole, Jr. M.D.
Professor of Surgery
Associate Professor in Pathology

Title:
Vice Chief, Division of Surgical Services

Training
MD, University of Virginia School of Medicine, 1984

Residency
General Surgery, Duke University Medical Center, 1984-1991
Thoracic Surgery, Duke University Medical Center, 1991-1993

Fellowship
Thoracic Oncology, Dana Farber Cancer Institute, Harvard Medical School (Massachusetts), 1993-1995

Clinical Interests
Thoracic oncology; general thoracic surgery; benign and malignant disease of the lung, esophagus, and mediastinum; advanced airway and thorascoscopic surgery; hyperhidrosis palmaris; mesothelioma.

Research Interests
Matthew G. Hartwig, M.D.
Associate Professor of Surgery

**Title**
Program Director, Thoracic Surgery Minimally Invasive Surgery Fellowship

**Surgical Director of Lung Transplantation**

**Training**
MD, Duke University School of Medicine, 2001

**Residency**
Surgery, Duke University Medical Center, 2001-2008
Thoracic Surgery, Duke University Medical Center, 2008-2011

**Fellowship**
Thoracic Surgery, Research Fellow, Duke University Medical Center, 2003-2005

**Clinical Interests**
Thoracic oncology with an emphasis on minimally invasive approaches to lung and esophageal cancer; video-assisted thoracic surgery (VATS) and robotic-assisted thoracic surgery (RATS); benign and malignant diseases of the lung, esophagus, mediastinum, and chest wall; surgical treatment of end-stage lung disease, including lung-volume reduction and lung transplantation; ex vivo lung perfusion; donation after cardiac death; extracorporeal life support for respiratory failure.

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G. Chad Hughes, M.D.
Associate Professor of Surgery

**Title**
Director, Aortic Surgery Program

**Training**
M.D., Duke University School of Medicine, North Carolina, 1995

**Residency**
General Surgery, Duke University Medical Center, North Carolina, 1995-2002
Cardiothoracic Surgery, Duke University Medical Center, North Carolina, 2002-2005

**Fellowship**
Thoracic Aortic Surgery, Hospital of the University of Pennsylvania, 2005

**Clinical Interests**
Adult cardiac surgery, surgery of the thoracic aorta, including disorders of the aortic root, ascending aorta, aortic arch, descending and thoracoabdominal aorta; thoracic endovascular aortic repair (TEVAR); transcatheter aortic valve implantation (TAVR); aortic valve repair.
Jacob A. Klapper, M.D.
Assistant Professor of Surgery
Assistant Professor in Immunology

**Training**
M.D., Indiana University School of Medicine, 2003

**Residency**
General Surgery, Indiana University School of Medicine, 2003 - 2011
Thoracic Surgery, Duke University Medical Center, North Carolina, 2011-2014

**Other Training**
Research Fellow, Surgery Branch, National Cancer Institute, 2005-2008

**Clinical Interests**
Thoracic oncology; general thoracic surgery; benign and malignant disease of the lung, esophagus, and mediastinum;

Shu Lin, M.D., Ph.D.
Associate Professor of Surgery, Assistant Professor in Immunology
Assistant Professor in Pathology

**Training**
M.D., Duke University School of Medicine, North Carolina, 1992

**Residency**
General Surgery, Duke University Medical Center, North Carolina, 1992-2001
Thoracic Surgery, Duke University Medical Center, North Carolina, 2001-2004

**Other Training**
PhD, Immunology, Duke University Medical Center, 2000

**Clinical Interests**
Cardiopulmonary transplantation (heart, lung and heart-lung transplantation), transplant immunology, adult cardiac surgery including CABG and valvular surgery.

**Research Interests**
Two challenges of cardiopulmonary transplantation are the lack of consistent long-term graft survival and the shortage of donor organs. In searching for solutions to these problems, Dr. Lin’s laboratory studies: (1) Mechanisms underlying the chronic rejection, especially that of lung and heart-lung allografts; (2) Induction of immunologic tolerance to reduce the morbidity and improve the long-term survival of heart and lung transplantation; (3) Xenotransplantation, with the ultimate goal of alleviating the problem of donor organ shortage but the more immediate goal of gaining general knowledge about transplantation immunobiology.
Andrew Lodge, M.D.
Associate Professor of Surgery
Assistant Professor in Pediatrics

Training
MD, Duke University School of Medicine, 1993

Residency
General Surgery, Duke University Medical Center, 1993-2000
Thoracic Surgery, Duke University Medical Center, 2000-2002

Fellowship
Pediatric Cardiac Surgery, Children's Hospital of Philadelphia (Pennsylvania), 2002-2003

Clinical Interests
Pediatric cardiac surgery, adult congenital heart disease, heart transplantation, ventricular assist devices.

Research Interests
Extracorporeal circulation
Ventricular assist
Clinical outcomes after congenital heart surgery

Carmelo A. Milano, M.D.
Professor of Surgery

Training
MD, University of Chicago Pritzker School of Medicine (Illinois), 1990

Residency
Cardiothoracic Surgery, Duke University Medical Center, 1997-1999

Fellowship
Molecular Cardiology, Howard Hughes Medical Institute, Duke University, 1992-1994
Cardiac Transplant, Papworth Hospital (England), 1999

Clinical Interests
Cardiac transplantation, left ventricular assist devices, adult cardiac surgery, mitral valve surgery, surgical treatments for end-stage congestive heart failure, aortic valve surgery
**Ryan P. Plichta, M.D.**  
Assistant Professor of Surgery

**Training**  
MD, Loyola University Chicago Stritch School of Medicine, 2008

**Residency**  
General Surgery Residency, Surgery, Loyola University Chicago Stritch School of Medicine, 2008 – 2013  
Cardiothoracic Surgery Residency, Surgery, Loyola University Chicago Stritch School of Medicine, 2013 - 2015

**Fellowship**  
Advanced Aortic And Endovascular Surgery Fellowship, Cleveland Clinic, 2015 – 2016

**Clinical Interests:**  
Aortic surgery, TAVR, adult cardiac surgery

**Jacob N. Schroder, M.D.**  
Assistant Professor of Surgery

**Training**  
MD, Georgetown University School of Medicine (Washington, DC), 2001

**Residency**  
General Surgery, Duke University Medical Center, 2001-2009  
Thoracic and Cardiovascular Surgery, Duke University Medical Center, 2009-2012

**Fellowship**  
Cardiothoracic Surgery Research Fellow, Cardiothoracic Surgery, Duke University Medical Center, 2003-2006

**Clinical Interests**  
Cardiac transplantation, mechanical circulatory support devices and heart failure surgery, adult cardiac surgery, cardiothoracic surgical education

**Betty C. Tong, M.D., M.H.S., M.S.**  
Associate Professor of Surgery

**Title**  
Associate Program Director, Thoracic Surgery

**Training**  
MD, Duke University School of Medicine, 1999  
MHS, The Johns Hopkins Bloomberg School of Public Health, 2009

**Residency**  
General Surgery, The Johns Hopkins Hospital, 1999-2005  
Thoracic Surgery, Duke University Medical Center, 2005-2008

**Clinical Interests**  
Thoracic oncology including lung cancer and mesothelioma, esophageal cancer, and chest wall tumors; diseases of the mediastinum; pulmonary metastases; minimally invasive/video-assisted thoracic surgery; lung volume reduction; benign lung and chest conditions

**Research Interests**  
Patient preferences and shared decision making  
Surgical education and learning
Current Residents
Current Residents

Integrated Training Program

2017

Mohamed Algahim, MD*
Medical School: Northeastern Ohio University College of Medicine
Career Interest: Adult Cardiac Surgery
Email: mohamed.algahim@duke.edu

*Dr. Algahim completed his PGY1 – 5 years at Medical College of Wisconsin

2021

Jatin Anand, MD
Medical School: University of Miami Leonard Miller School of Medicine
Career Interest: Adult Cardiac Surgery
Email: jatin.anand@duke.edu

2023

Julie Doberne, MD, PhD
Medical School: Oregon Health Sciences University School of Medicine
Career Interest: Adult Cardiac Surgery
Email: julie.doberne@duke.edu
Thoracic Surgery Integrated Research Fellowship

Muath Bishawi, MD, MPH
Medical School: State University of New York at Stony Brook
Career Interest: Cardiac Surgery
Email: muath.bishawi@duke.edu

Traditional Training Program

2017

Christopher Scott, MD
Medical School: University of Virginia
Residency: General Surgery, University of Cincinnati
Career Interest: General Thoracic Surgery
Email: christopher.d.scott@duke.edu

Adam Williams, MD
Medical School: University of Miami
Residency: General Surgery, University of Miami
Career Interest: Adult Cardiac Surgery
Email: adam.r.williams@duke.edu
2018

Brittany Zwischenberger, MD
Medical School: University of Texas Southwestern Medical Center
Residency: General Surgery, University of Kentucky Medical Center
Career Interest: Adult Cardiac Surgery
Email: brittany.zwischenberger@duke.edu

2019

Benjamin Bryner, MD, MS
Medical School: University of Michigan Medical School
Residency: General Surgery, University of Michigan
Career Interest: General Thoracic Surgery/Lung Transplantation
Email: ben.bryner@duke.edu

Joint Training Program

2017

Nicholas Andersen, MD
Medical School: Harvard Medical School
Residency: General Surgery, Duke University Medical Center
Career Interest: Congential Surgery
Email: nicholas.andersen@duke.edu
2018

Anthony Castleberry, MD, MMCI
Medical School: University of Pittsburgh School of Medicine
Residency: General Surgery, Duke University Medical Center
Career Interest: Cardiac Surgery
Email: anthony.castleberry@duke.edu

Jennifer Hanna, MD, MBA
Medical School: Duke University School of Medicine
Residency: General Surgery, Duke University Medical Center
Career Interest: General Thoracic Surgery
Email: jennifer.hanna@duke.edu

2019

Asvin Ganapathi, MD
Medical School: Case Western Reserve University School of Medicine
Residency: General Surgery, Duke University Medical Center
Career Interest: Adult Cardiac Surgery
Email: asvin.ganapathi@duke.edu

Paul Speicher, MD, MHS
Medical School: Northwestern University Feinberg School of Medicine
Residency: General Surgery, Duke University Medical Center
Career Interest: General Thoracic Surgery
Email: paul.speicher@duke.edu
2020

Jeffrey Keenan, MD
Medical School: University of Maryland School of Medicine
Residency: General Surgery, Duke University Medical Center
Career Interest: Adult Cardiac Surgery
Email: jeffrey.keenan@duke.edu

Chi-Fu Jeffrey Yang, MD
Medical School: Harvard Medical School
Residency: General Surgery, Duke University Medical Center
Career Interest: General Thoracic Surgery
Email: chifu.jeffrey.yang@duke.edu
Resident Publications
Mohamed Algahim, MD

Refereed journals


BOOK CHAPTERS


Jatin Anand, MD

Refereed journals


Book Chapters


Nicholas Andersen, MD

Refereed journals


**Book Chapters**


10. Founding Co-Author, First Aid USMLERx Step 1 Qmax Online Test Bank. www.UsmleRx.Com


**Muath Bishawi, MD, MPH**

**Refereed journals**


Book Chapters


Anthony Castleberry, MD

Refereed journals


Julie Doberne, MD, PhD

Refereed journals


Asvin Ganapathi, MD

Refereed journals


9. Englum BR, Ganapathi AM, Schechter MA, Harrison JK, Glowar DD, Hughes GC. Changes in Risk Profile and Outcomes of Patients Undergoing Surgical Aortic Valve Replacement From the Pre- to Post-Transcatheter Aortic


**Book Chapters**


**Jennifer Hanna, MD, MBA**

**Refereed journals**


35. Hanna JM, Simiele E, Lawson DC, Tyler D. Conflict of interest issues pertinent to Veterans Affairs Medical Centers. J Vasc Surg 2011 Sept; 54 (3 Suppl): 50S-54S

Book chapters

Jeffrey Keenan, MD

Refereed journals


Christopher Scott, MD

Refereed journals


Book Chapters


Paul Speicher, MD, MHS

Refereed journals


Book chapters


Adam Williams, MD

Refereed journals


Chi-Fu Jeffrey Yang, MD

Refereed journals


Brittany Zwischenberger, MD

Referred journals

13. Totten C, Tharrappel JC, Harris JW, **Zwischenberger BA, Roth JS.** Doxycycline alters collagen composition following ventral hernia repair. Accepted to Surgical Endoscopy July, 26 2016.

Book chapters

Resident Presentations at National Meetings (last 4 years)
Society of Thoracic Surgeons: January 2013

- Dr. Matthew Schechter: Outcomes Following Implantable Left Ventricular Assist Device Replacement Procedures

International Symposium on Regional Cancer Therapies: February 2013

- Dr. Paul Speicher: A novel method of assessing real-time changes in melanoma tumor hypoxia and blood flow during regional chemotherapy.

World Congress of Paediatric Cardiology and Cardiac Surgery: April 2013

- Dr. Asad Shah: Management and Outcome of Isolated Partial Anomalous Pulmonary Venous Connection from the Left Upper Lobe

International Society for Heart and Lung Transplant: May 2013

- Dr. Anthony Castleberry: Utility of Six-Minute Walk Distance in Predicting Outcomes after Lung Transplant: A Nationwide Survival Analysis
- Dr. Anthony Castleberry: Socioeconomic Disparities Associated with Medication Non-Adherence Following Lung Transplantation in Adult Recipients
- Dr. Anthony Castleberry: Mortality Differences after Heart Transplantation in Patients Bridged with Balloon Pumps vs. Left Ventricular Assist Devices

American Association for Thoracic Surgery: May 2013

- Dr. Mani Daneshmand: Midterm Outcomes with Continuous Flow Left Ventricular Assist Devices for Destination Therapy
- Dr. Mani Daneshmand: Treatment Strategies for Ischemic Mitral Regurgitation: A 20-year Experience

American Transplant Congress: May 2013

- Dr. Anthony Castleberry: Lung Transplant with Allografts from Donors with a History of Smoking: A Nationwide Analysis of Usage and Outcomes
- Dr. Anthony Castleberry: The Utility of Six-Minute Walk Distance in Predicting Waitlist Mortality for Lung Transplant Candidates

European Society of Thoracic Surgeons: May 2013

- Dr. Benjamin Wei: The Impact Of Pulmonary Hypertension On Morbidity And Mortality Following Major Lung Resection

International Society for Minimally Invasive Cardiothoracic Surgery: June 2013

- Dr. Jennifer Hanna: Flat Learning Curve for Robotic Lobectomy in a Video-Assisted Thoracoscopic
- Dr. Paul Tang: Right Mini-thoracotomy versus Median Sternotomy for Mitral Surgery in Patients with Chronic Renal Impairment, a Propensity Matched Study

Society of Vascular Surgery: June 2013

- Dr. Matthew Schechter: Frailty Does Not Increase Risk in Thoracic Endovascular Aortic Repair

Western Thoracic Surgery Association: June 2013

- Dr. Asvin Ganapathi: Modeling Frailty and Risk in Proximal Aortic Surgery
- Dr. Jack Haney: Differential Prognostic Significance of Extralobar and Intralobar Nodal Metastases in Patients with Surgically Resected Stage II Non-small Cell Lung Cancer
Southern Thoracic Surgical Association: November 2013

- Dr. James Meza: The Perceived Bias Against Integrated Cardiothoracic Surgery Residency Applicants During their General Surgery Interviews: Are We Hurting a Generation of Strong Candidates?
- Dr. Jennifer Hanna: The Prognostic Importance of the Number of Dissected Lymph Nodes after Induction Chemoradiation for Esophageal Cancer
- Dr. Jennifer Hanna: Thoracic Endovascular Aortic Repair for Chronic DeBakey Type IIIb Aortic Dissection

American Heart Association Scientific Sessions: November 2013

- Dr. Nicholas Andersen: Ca2+ Signaling is Required for Cardiomyocyte Hypertrophy During Chamber Development Independent of Contraction or Blood Flow
- Muath Bishawi: Postoperative Atrial Fibrillation Impacts One Year Clinical Outcomes and Costs: The VA ROOBY Trial.

Society of Thoracic Surgeons: January 2014

- Dr. Nicholas Andersen: RiaSTAP® Use to Increase Fibrinogen Levels During Thoracic Aortic Surgery Involving Deep Hypothermic Circulatory Arrest
- Dr. Asad Shah: Early Surgical Experience with Loeys-Dietz Syndrome
- Dr. Paul Speicher: Outcomes after treatment of locally advanced (T3No-2) Non-Small Cell Lung Cancer: a population-based study of 17,378 patients
- Dr. Jennifer Hanna: Adult Surgical Experience with Loeys-Dietz Syndrome
- Dr. Jennifer Hanna: RiaSTAP® Use to Increase Fibrinogen Levels During Thoracic Aortic Surgery Involving Deep Hypothermic Circulatory Arrest
- Dr. Jennifer Hanna: Catastrophic immunologic reaction and pseudoaneurysm formation after Medtronic Freestyle Stentless Procine Aortic Bioprosthetic implantation: a word of caution
- Dr. Asvin Ganapathi: The Effect of Prior Pneumonectomy or Lobectomy on Subsequent Lung Transplantation

Southern Association for Vascular Surgery Meeting: January 2014

- Dr. Asvin Ganapathi: Role of Cardiac Evaluation Prior to Thoracic Endovascular Aortic Repair

Academic Surgical Congress: February 2014

- Dr. Jennifer Hanna: Connective Tissue Growth Factor (CTGF/CCN2) is a Direct Transcriptional Target of SOX2 and Regulator of Integrin Alpha 5, Bone Morphogenetic Protein 7, and Collagen I Alpha 1 Expression in Squamous Cell Lung Cancer
- Dr. Paul Speicher: Congestive Heart Failure and the Role of Laparoscopy in General Surgery
- Dr. Asvin Ganapathi: Is A Priori Staging of Bilateral Lung Transplant the Optimal Surgical Approach for High-Risk Patients with Interstitial Lung Disease?

Annual Meeting of the International Society for Heart and Lung Transplantation: April 2014

- Dr. Paul Speicher: Single Lung Transplantation in the United States: What Happens to the Other Lung?

Aortic Symposium: April 2014

- Dr. Asad Shah: Outcomes of Elderly Patients Undergoing Proximal Aortic Surgery using Deep Hypothermic Circulatory Arrest: Prohibitive Risk or Equivalent Outcomes to Younger Patients?
- Dr. Asad Shah: Prolonged Postoperative Respiratory Support after Proximal Thoracic Aortic Surgery: Is Deep Hypothermic Circulatory Arrest a Risk Factor?
**American Society of Clinical Oncology: May 2014**

- Dr. Paul Speicher: Adjuvant Chemotherapy is Associated with Improved Survival After Esophagectomy without Induction Therapy for Node-positive Adenocarinoma

**World Transplant Congress: July 2014**

- Dr. Anthony Castleberry: Graft and Patient Survival Following Kidney Transplantation in Previous Lung Transplant Recipients.

**AATS FACTS-Care 11th Annual Conference, CVT Critical Care: October 2014**

- Dr. Judson Williams: Central venous pressure after coronary artery bypass surgery: Does it predict postoperative mortality or renal failure? John W. Kirklin CT Resident & Fellow Research Award

**The American College of Surgeons Clinical Congress: October 2014**

- Dr. Paul Speicher: Outcomes for locally advanced T1- T3N1M0 esophageal cancer: the impact of traveling to a high volume center for treatment

**Southern Thoracic Surgical Association: November 2014**

- Dr. Asvin Ganapathi: Long-Term Survival Following Bovine Pericardial Versus Porcine Stented Bioprosthetic Aortic Valve Replacement: Does Valve Choice Matter?

**Society of Thoracic Surgeons: January 2015**

- Dr. Asad Shah: Understanding Why Residents May Inaccurately Log Their Role in Operations: A Look at the 2013 In-Training Exam Survey.
- Dr. Jeffrey Keenan: Characterization of Intraoperative Electroencephalography during Aortic Hemiarch Replacement with Moderate Hypothermic Circulatory Arrest.

**American College of Cardiology Annual Meeting: March 2015**

- Dr. Asad Shah: The Fate of Tricuspid Regurgitation after Repair of Pre-Tricuspid Valve Left-to-Right Shunts.
- Dr. Asad Shah: Gender and Cardiothoracic Surgery Training: Specialty Interests, Satisfaction, and Career Pathways.

**American Association for Thoracic Surgery: April 2015**


**Society for Vascular Surgery: June 2015**

- Dr. Nicholas Andersen: Hybrid Repair of the Aortic Arch: Long-Term Outcomes After a Decade of Intervention.
- Dr. Muath Bishawi: Resident versus attending surgeon patency and clinical outcomes in on- versus off-pump coronary artery bypass surgery.

**European Conference on General Thoracic Surgery: June 2015**
• Dr. Chi-Fu Yang: Impact of Patient Selection and Treatment Strategies on Outcomes After Lobectomy for Biopsy-Proven Stage IIIA pN2 Non-Small Cell Lung Cancer.
• Dr. Chi-Fu Yang: Performing Sublobar Resection Instead of Lobectomy Compromises the Survival of Stage I Non-small Cell Lung Cancer in Patients 80 years of Age and Older.

American Association for Thoracic Surgery International Coronary Congress: August 2015
• Dr. Judson Williams: Glycemic Control in Patients Undergoing Coronary Artery Bypass Graft Surgery: Clinical Features, Predictors, and Outcomes.

World Conference on Lung Cancer: September 2015
• Dr. Chi-Fu Yang: Survival after Surgery for pN1 and pN2 Small Cell Lung Cancer: A Comparison with Surgical Treatment of Non-Small Cell Lung Cancer.
• Dr. Chi-Fu Yang: Right-sided vs Left-side Pneumonectomy after Induction Therapy for Non-Small Cell Lung Cancer.
• Dr. Chi-Fu Yang: Long-term Survival after Surgery for Pathologic N1 and N2 Small Cell Lung Cancer: A Comparison with Nonoperative Management.
• Dr. Chi-Fu Yang: Wedge Resection vs Segmentectomy for Patients with T1A N0 Non-small Cell Lung Cancer.

AATS FACTS-Care 12th Annual Conference, CVT Critical Care: October 2015
• Dr. Jeff Javidfar: Standardized CT ICU Handover. John W. Kirklin CT Resident & Fellow Research Award

Southern Thoracic Surgical Association: November 2015
• Dr. Asad Shah, Dr. Nicholas Andersen: Characterizing the Operative Experience of Cardiothoracic Surgery Residents in the United States: What are residents really doing in the operating room?
• Dr. Chi-Fu Yang: Outcomes of Major Lung Resection After Induction Therapy for Non-small Cell Lung Cancer in Elderly Patients.

Southern Association for Vascular Surgery: January 2016
• Dr. Nicholas Andersen: An Integrated Approach to Thoracoabdominal Aortic Aneurysm Repair: Complimentary Roles of Open and Hybrid Approaches

Society of Thoracic Surgeons: January 2016
• Dr. Asad Shah: An Overlooked Tool to Address Mitral Regurgitation at the Time of Septal Myectomy for Hypertrophic Obstructive Cardiomyopathy.
• Dr. Paul Speicher: Induction Chemotherapy for cN1 Non-small Cell Lung Cancer Is Not Associated with Improved Survival.

American Association for Thoracic Surgery: May 2016
• Dr. Muath Bishawi: Treatment of Ischemic MR with a rigid, undersized ring yeilds excellent recurrence free rate.

International Society for Heart and Lung Transplantation: May 2016
• Dr. Muath Bishawi: Incidence and outcomes after stroke on rotary flow ventricular assist device support.

Western Thoracic Surgical Association: June 2016
• Comparison of Right Ventricle-Pulmonary Artery Shunt Position in the Norwood Procedure: An Analysis of the Pediatric Heart Network Public Database.
## Summary of Graduates

### Positions of Recent Residents

<table>
<thead>
<tr>
<th>Year</th>
<th>Resident</th>
<th>First Position</th>
<th>Academic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Jeffrey Javidfar</td>
<td>Emory University</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Asad Shah</td>
<td>Rex Healthcare</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Judson Williams</td>
<td>WakeMed</td>
<td>No</td>
</tr>
<tr>
<td>2015</td>
<td>Loretta Erhunmwunsee</td>
<td>City of Hope</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Matthew Gaudet</td>
<td>Ochsner</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Alexander Iribarne</td>
<td>Dartmouth-Hitchcock</td>
<td>Academic</td>
</tr>
<tr>
<td>2014</td>
<td>John “Jack” Haney</td>
<td>Duke</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Jacob Klapper</td>
<td>Medical University South Carolina</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Paul Tang</td>
<td>Duke</td>
<td>Academic</td>
</tr>
<tr>
<td>2013</td>
<td>Mani Daneshmand</td>
<td>Duke</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Chad Johnson</td>
<td>US Navy</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Ben Wei</td>
<td>University of Alabama, Birmingham</td>
<td>Academic</td>
</tr>
<tr>
<td>2012</td>
<td>Keshava Rajagopal</td>
<td>University of Maryland</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Jacob Schroder</td>
<td>Duke</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Jason Williams</td>
<td>US Air Force/UC Davis</td>
<td>Academic</td>
</tr>
<tr>
<td>2011</td>
<td>Mimi Ceppa</td>
<td>Indiana University</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Matthew Hartwig</td>
<td>Duke</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Anthony Lemaire</td>
<td>UMDNJ</td>
<td>Academic</td>
</tr>
<tr>
<td>2010</td>
<td>Edward Cantu</td>
<td>University of Pennsylvania</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Teng Lee</td>
<td>University of Maryland</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Joseph Turek</td>
<td>Children’s’ Hospital PA</td>
<td>Academic</td>
</tr>
<tr>
<td>2009</td>
<td>Berry, Mark</td>
<td>Duke</td>
<td>Academic</td>
</tr>
<tr>
<td></td>
<td>Pal, Jay</td>
<td>U. Texas-San Antonio</td>
<td>Academic</td>
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<tr>
<td></td>
<td>Williams, Matthew</td>
<td>Louisville</td>
<td>Academic</td>
</tr>
<tr>
<td>2008</td>
<td>Jeff Gaca</td>
<td>Duke</td>
<td>Academic</td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
<td>Location</td>
<td>Status</td>
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<tr>
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<tr>
<td>Cyrus Parsa</td>
<td>Duke</td>
<td></td>
<td>Academic</td>
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<tr>
<td>Betty Tong</td>
<td>Duke</td>
<td></td>
<td>Academic</td>
</tr>
<tr>
<td>Zane Atkins</td>
<td>Air Force; Durham VA</td>
<td></td>
<td>Academic</td>
</tr>
<tr>
<td>Sitaram Emani</td>
<td>Boston Children’s</td>
<td></td>
<td>Academic</td>
</tr>
<tr>
<td>Mark Onaitis</td>
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Duke Graduate Medical Education

Employment & Benefits

- Employment Requirements
- Requirement and Standards
- Stipends
- Sample Agreement of Appointment
- Program and GME Benefits
Employment Requirements

The qualifications for membership to the Associate Medical Staff (Graduate Medical Trainee) eligibility are as follows:

- Graduates of medical schools in the United States and Canada accredited by the Liaison Committee on Medical Education (LCME).
- Graduates of colleges of osteopathic medicine in the United States accredited by the American Osteopathic Association (AOA).
- Graduates of medical schools outside the United States and Canada who meet one of the following qualifications:
  - Have received a currently valid certificate from the Educational Commission for Foreign Medical Graduates (ECFMG) or
  - Have a full and unrestricted license to practice medicine in a U.S. licensing jurisdiction.
- Graduates of medical schools outside the United States who have completed a Fifth Pathway program provided by an LCME-accredited medical school
- Have a North Carolina Full State License or Resident Training License (RTL). (see: Medical License)
- Official Medical School Transcript with conferred or graduated
- A completed Postgraduate Training Verification Form (if applicable)
- Current ACLS/BLS/PALS certification (see: ACLS/BLS/PALS Certification Policy)
- Proof of identity and US Employment Eligibility (I-9) via E-Verify (See: I-9 Form Policy) including SS Card
- Health Record Clearance, which includes drug screening (See: the Drug Testing Policy)
- A signed Agreement of Appointment (Contract)
  - The signed Graduate Medical Education Agreement of Appointment; is not effective, and employment will not commence, until all credentialing documents have been received and approved by the Office of GME and all requirements for hire have been satisfied.
- Application for Appointment, which requires:
  - 2 Reference forms
  - Criminal Background Check (includes EPLS & OIG check)
  - National Practitioner Databank check
  - ECFMG check (for International Medical Graduates)
- Completion of several payroll forms which include:
  - Duke Insurance Beneficiary Form
  - Health/Dental/Vision Enrollment Form
  - Reimbursement Accounts Enrollment Form (if applicable)
  - Acknowledgment Form
  - Foreign National Form (if applicable)
- Completion of all required Online Safety Training Modules and GME Learning Modules (See: Online Safety Training Modules and GME Modules) (Completed after Hire)
- USMLE (or equivalent) Transcript
  - Document passing scores in the first two parts of appropriate medical licensure examinations (USMLE Step I, Step 2CK and Step 2CS (if applicable), COMLEX, or equivalent Canadian examinations, etc.). After 24 months of post graduate training passing of all three parts of the licensing examinations must be provided.
  - This policy applies to all graduate medical trainees whether United States or International Medical School graduates. Programs have the right to impose more stringent requirements, but not less than those contained in this policy. An Agreement of Appointment will not be valid without satisfying this requirement. (*USMLE statement if trainee has not passed Step 3)
- Attend Institutional Orientation

A trainee may begin his/her clinical duties when he/she has met the above GME requirements.
Requirements and Standards

Essential Abilities Requirements/Technical Standards

A. Introduction

All candidates for any of the Duke Graduate Medical Education programs must meet the criteria necessary to successfully complete the program. To achieve the optimal educational experience and to maintain patient safety, trainees are required to participate in all phases of the training program. The study of medicine and its specialties and subspecialties is not a pure intellectual exercise. Rather a specific minimum set of observation, communication, motor, intellectual/conceptual, integrative and quantitative abilities, behavioral and social attributes and ethical and legal standards are needed to be a successful intern, resident or fellow. To be successful, one must progress with increasing independence throughout the program and by the time of program completion must be capable of competent and independent practice in that field. Essential abilities and characteristics required for the completion of the training program consist of certain minimum physical and cognitive abilities and sufficient mental and emotional stability to complete the entire training program. Trainees must possess all of the requirements defined as technical standards listed in the six categories below, which in conjunction with individual program qualification criteria constitute the training program. Although these standards serve to delineate the necessary physical and mental abilities of all candidates, they are not intended to deter any candidate for whom reasonable accommodation will allow the fulfillment of the complete training program. Candidates with questions regarding technical standards are encouraged to contact Dr George Jackson/Dr. Carol Epling in Employee/Occupational Health and Wellness immediately to begin to address what types of reasonable accommodations may be considered for development to achieve these standards. Candidates with questions about Duke’s reasonable accommodation process may contact Barbara Briner, Coordinator, Employment and Public Reasonable Accommodations with the Disability Management System at 919-684-8247.

Individual programs may require more stringent or more extensive abilities as appropriate to the requirements for training in that specialty and in certain specialties one or more of these technical standards may be more or less essential.

Candidates are encouraged to contact individual Duke Programs in which they are interested to see if additional expectations apply.

Programs that do not oversee all of the services required by their own discipline must work closely with other program directors with authority over services on which their trainees will be required to rotate. This is necessary in order to obtain copies of their most recent technical standards and ensure trainees meet technical standards in all areas required for completion of their program.

B. TECHNICAL STANDARDS

I. Observation:
   a. Observe materials presented in the learning environment including, but not limited to, audiovisual presentations, written documents, tissues and gross organs in the normal and pathologic state and diagnostic images.
   b. Accurately and completely observe patients both at a distance and directly and assess findings.
   c. Obtain a medical history and perform a complete physical examination in order to integrate findings based on these observations and to develop an appropriate diagnostic and treatment plan.

II. Communication:
   a. Communicate effectively, efficiently, accurately, respectfully and sensitively with patients, their families and members of the health care team.
   b. Perceive non-verbal communications, including facial expression, body language and affect.
   c. Respond appropriately to emotions communicated verbally and none verbally.
d. Synthesize accurately and quickly large volumes of medical information from different
types of written forms and formats, electronic medical records, both typed and hand
written, that constitutes medical history.
e. Record information accurately and clearly and communicate effectively in English with
other health care professionals in a variety of patient settings including a variety of hand
written and computerized record systems.

III. Motor Function:
   a. Elicit information from patients and perform physical examinations and diagnostic
      maneuvers, at a minimum via palpitation, auscultation, and percussion.
   b. Carry out diagnostic maneuvers required by the specialty (e.g. positioning patients,
      coordinating gross and fine motor movements).
   c. Respond to emergency situations in a timely manner and provide general and emergency
care necessitating the coordination of gross and fine motor movements, equilibrium and
sensation.
   d. Adhere to universal precaution measures and meet safety standards applicable to
      inpatient and outpatient settings and other clinical activities.
   e. Manipulate equipment and instruments to perform basic laboratory tests and procedures
      as required to attain residency goals (e.g. stethoscope, central site sets, ultrasound etc).

IV. Intellectual/Conceptual, Integrative, & Quantitative Abilities:
   a. Perform calculations necessary to solve quantitative problems as required by patient care
      and testing needs.
   b. Collect, organize, prioritize, analyze, synthesize and assimilate large amounts of
      technically detailed and complex information in a timely fashion and with progressive
      independence. This information will be presented in a variety of educational and clinical
      settings including lectures, small group discussions and individual clinical settings.
   c. Analyze, integrate, and apply this information for problem solving and decision-making in
      an appropriate and timely manner for the clinical situation.
   d. Comprehend and learn factual knowledge from readings and didactic presentations.
   e. Apply knowledge and reasoning to solve problems as outlined by the curriculum.
   f. Recognize, comprehend and draw conclusions about three dimensional spatial
      relationships and logical, sequential relationships among events.
   g. Formulate and test hypotheses that enable effective and timely problem solving in
      diagnosis and treatment of patients in a variety of clinical modalities.
   h. Develop habits for lifelong learning.

V. Behavioral and Social Attributes:
   a. Possess and demonstrate the maturity and emotional stability required for full use of
      intellectual skill, exercise good judgment, and have the ability to complete all
      responsibilities attendant to the diagnosis and care of patients.
   b. Develop a mature, sensitive and effective relationship with patients and colleagues.
   c. Tolerate work hours consistent with ACGME duty standards, function effectively under
      stress, and display flexibility and adaptability to changing environments during training
      and patient care including call, sustained work up to 30 hours at a stretch and up to 80
      hours/week of clinical work or the specialty-specific duty hours.
   d. Function in the face of uncertainty and ambiguity in rapidly changing circumstances.
   e. Behave in an ethical and moral manner consistent with professional values and standards.
   f. Exhibit sufficient interpersonal skills, knowledge, and attitudes to interact positively and
      sensitively with people from all parts of society, racial and ethnic backgrounds, and belief
      systems.
   g. Cooperate with others and work collaboratively as a team member.
   h. Demonstrate insight into personal strengths and weaknesses.
   i. Seek the advice of others when appropriate.
   j. Be punctual, present at all assignments when expected or notify superiors.
   k. Complete work including documentation and dictations in a timely manner
   l. Acknowledge conflicts of interest, mistakes and adverse outcomes and cooperate in their
      resolution.
   m. Remain awake and alert for assigned duty periods and teaching activities within duty
      hours and abide by rules and policies.

VI. ETHICAL AND LEGAL STANDARDS:
   a. Candidates must meet the legal standards to be licensed to practice medicine in the State
      of North Carolina. As such, candidates for admission must acknowledge and provide
      written explanation of any felony offense or disciplinary action taken against them prior to
      matriculation in any Duke GME Program.
b. Should the intern, resident or fellow be convicted of any felony offense, or any offense that puts medical licensure at risk, while in a GME Program, he/she agrees to immediately notify the Program Director and the GME Office as to the nature of the conviction.

c. Failure to disclose prior or new offenses can lead to disciplinary action that may include dismissal.

C. PROCESS

Program directors recognize their responsibilities to verify that at program completion, trainees are capable of competent and independent practice with in the specialty or subspecialty. To do so, trainees will have to have demonstrated competencies that include knowledge, attitudes, and skills which equip them to function in a broad variety of clinical situations.

Duke Graduate Medical Education has an institutional commitment to provide equal opportunities for qualified interns, residents and fellows with disabilities who apply for admission to any of the Duke GME programs. Duke GME is a leader in diversity and individual rights, with a strong commitment to full compliance with state and federal laws and regulations (including the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990.)

A “qualified person with a disability” is an individual with a disability who meets the academic and technical standards requisite to admission or participation in GME programs, with or without reasonable accommodations.

Admitted candidates with disabilities are reviewed individually, on a case-by-case basis, with a complete and careful consideration of all the skills, attitudes and attributes of each candidate to determine whether they can satisfy the standards with or without any reasonable accommodations.

An accommodation is not reasonable if it poses a direct threat to the health or safety of patients, self and/or others, if making it requires a substantial modification in an essential element of the program, if it lowers GME program standards, or possesses an undue administrative or financial burden. As noted above, except in rare circumstances, the use by the candidate of a third party (e.g., an intermediary) to perform any of the functions described in the Technical Standards set forth above would constitute an unacceptable substantial modification.

Admission to any of Duke’s GME programs is conditional on the candidate’s having the willingness and ability to satisfy the technical standards, with or without reasonable accommodation.

Admitted candidates who have a disability and need accommodations should initiate discussions with the Program Director as soon as the offer of admission is received and accepted. It is the responsibility of a candidate with a disability to provide sufficiently current information documenting the general nature and extent of his/her disability, and the functional limitations proposed to be accommodated. GME reserves the right to request new or additional information.

Evaluating and facilitating effort by the candidate, are the Duke Program Director, Employee/Occupational Health (EOHW) and Wellness, and the Disability Management System. Should a candidate have or develop a condition that would place patients, the candidate or others at risk or that may affect his/her need for accommodation, an evaluation with EOHW may be necessary. As in initial assessments, a complete and careful reconsideration of all the skills, attitudes and attributes of each candidate will be performed.

Duke GME Programs, program directors and selection committees are responsible for adhering to these technical standards and process during the selection of interns, residents and fellows. When an individual enters a Graduate Medical Education Training program it is expected that all necessary accommodations will be detailed and agreed to by the program before (s) he begins training.

If you have any questions about this document or whether you meet the technical standards described above, please contact Dr. George Jackson or Dr. Carol Epling and Occupational and Employee Health or Duke GME.
## Stipends

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Graduate Medical Education Agreement of Appointment
Duke University Health System, Inc. d/b/a Duke University Hospital
2016 - 2017

This agreement of appointment made this 1st day of April 2016 by and between Duke University Health System, Inc. (hereinafter referred to as "DUHS"), for and on behalf of Duke University Hospital and [Trainee] sets forth the terms and conditions of the Trainee's appointment as Associate Medical Staff of Duke University Hospital (hereinafter referred to as "Hospital").

The purpose and intention of this training agreement is to assist the trainee physician in the pursuit of his or her studies. In consideration of the mutual promises contained herein, the Hospital and the Trainee each agree as follows:

1. Terms of Appointment

1.1. Commencement Date for DUHS in conjunction with the Department of [Department] in the Program of [Program] from [7/1/2016] to [6/30/2017] (term may not exceed next fiscal year);

1.2. As a condition precedent to appointment, the Trainee must provide all required credentialing documentation to the Office of Graduate Medical Education prior to commencement date. This agreement may be declared a nullity by the DUHS if the trainee fails to provide the Office of Graduate Medical Education with all of the following credentialing documentation required for certification of eligibility including but not necessarily limited to the following:

1.2.1. A completed current Application for Membership to the Associate Medical Staff of Duke University Hospital approved by Risk Management and Legal Counsel.

1.2.2. Documentation of passage of appropriate licensing examinations as per Institutional Policy (See USMLE Policy at www.mme.duke.edu).

1.2.3. Documentation of employment eligibility (Federal IR requirement).

1.2.4. If the Trainee is an international medical school graduate, a current, and valid ECFMG certificate.

1.2.5. A valid license to practice medicine that complies with the applicable provisions of the laws pertaining to licensure in the state of North Carolina or any other state in which the Program may assign Trainee for clinical duties pursuant to the Trainee's Program.

1.2.6. Life support certification(s) ACLS, BCLS, and PALS as prescribed by Program, and Duke University Hospital.

1.2.7. This signed Graduate Medical Education Agreement of Appointment, provided, however, that the parties acknowledge and agree that this agreement of appointment will not be effective, and Trainee's employment will not commence, until conditions precedent to appointment (including but not limited to the satisfactory completion of the credentialing process) have been satisfied.

1.2.8. Submission of a health examination and supplementary tests, which includes tests for drug and/or alcohol abuse, and receive the required immunizations in compliance with DUHS policy and all applicable state, and local laws and regulations. It must be determined that the Trainee is in sufficient physical and mental condition to perform the essential functions of appointment. The results of all examinations shall be provided to Employee Occupational Health and Wellness.

1.2.9. Further information that DUHS may request in connection with the Trainee's credentials, not limited to, Criminal Background Check and clearance from the National Practitioner Data Bank.

1.2.10. Any document not printed in English must be accompanied by an acceptable original English translation performed by a qualified translator. Each translation must be accompanied by an affidavit of accuracy acceptable to DUHS.

2. Trainee Responsibilities. The trainee physician must meet the qualifications for trainee eligibility as outlined in the Accreditation Council for Graduate Medical Education (ACGME) Institutional Requirements (www.acgme.org), or as set forth in such other applicable accreditation requirements that may be in effect from time to time. In providing services and in participation in the activities of the Program, the Trainee agrees to do the following:

2.1. Obey and adhere to the Medical Staff Bylaws and Bylaws of the Association of American Medical Staff and policies and practices of the Institution and Program(s), including but not limited to the following:

2.1.1. Obey and adhere to the corollary policies and procedures of all the facilities to which the Trainee has been assigned, including completion of all facility required education programs.

2.1.2. Obey and adhere to all applicable state, federal and local laws, as well as the standards required to maintain accreditation by the Joint Accreditation Council for the Accreditation of Graduate Medical Education (ACGME) and any other relevant accrediting, certifying, or licensing organization, including the North Carolina Medical Board.

2.2. Participate fully in the educational, research and scholarly activities as assigned by the Institution and Program (and/or as necessary for the completion of applicable graduate requirements). Attend all required educational conferences, assume responsibility for teaching and supervising other trainees and students, and participate in assigned DUHS, Hospital, Medical Staff committee activities.

2.3. Use his or her best efforts to provide safe, effective and compassionate patient care, and present at all times a courteous and respectful attitude toward all patients, colleagues, employees, visitors at DUHS and other facilities/rotation sites to which the Trainee is assigned.

2.4. Provide clinical services

2.4.1. Commensurate with his/her level of advancement and responsibilities.

2.4.2. Under appropriate supervision.

2.4.3. At sites specifically approved by the Program and Office of Graduate Medical Education, and

2.4.4. Under circumstances and at locations covered by the Hospital's professional liability insurance maintained for the Trainee in accordance with section 5.4 below.

2.5. Demonstrate competency in Patient Care, Medical Knowledge, Interpersonal and Communication Skills, Practice Based Learning and Improvement, Professionalism, and Systems Based Practice (and reasonable progress in ACGME milestones for specialties which they are required, as determined by the institution in its sole discretion) by program completion.

2.6. Cooperate fully:

2.6.1. Coordinate and complete the required submissions and activities including the legible and timely completion of patient medical records, charts, reports, statistical operative and procedure logs and/or other clinical documentation required by the ACGME, Hospital, DUHS, Department and Program.

2.6.2. Report to the Office of Graduate Medical Education, and cooperate with the North Carolina Medical Board or any other state medical board, any investigation or correspondence regarding issues which may impact state licensure.

2.7. Return at the time of the expiration or termination of the Agreement, all Hospital property, including but not limited to books, equipment, and pages; complete all necessary records; and settle all professional and financial obligations.

2.8. Comply with and complete all required Hospital, Department and Program surveys, reviews, evaluations, quality assurance and credentialing activities.

2.9. Report immediately: a) to DUHS Director of Risk Management or the Office of University Counsel any inquiry by any private or governmental attorney or investigator (including, without limitation, inquiries related to services provided at the Veteran's Administration, or any other clinic or facility), or b) to the Hospital's Office of
Public Affairs any inquiry by any member of the press. The Trainee understands that the Hospital encourages the Trainee's full cooperation with any governmental investigation or inquiry. The Trainee agrees not to communicate with any inquiring private attorney or any members of the press except merely to refer such private attorneys to the Office of University Counsel and to refer the press to the Public Relations Office.

2.10. Cooperate fully with Hospital administration, including but not limited to the departments of Nursing, Professional Services, Financial Services, Social Services, and other ancillary services departments in connection with the evaluation of appropriate discharge and post-hospital care for hospital patients.

2.11. Obey and adhere to the Hospital's compliance requirements and professional standards; including those in the Hospital Medical Staff Bylaws.

2.12. Cooperate fully with Hospital institutional policies prohibiting discrimination and harassment.

http://www.hr.duke.edu/policies/diversity/harassment.php.

2.13. Permit the Hospital to obtain from and provide to all proper parties any and all information as required or authorized by law or by any accreditation body, and the Trainee covenants to hold harmless the Hospital, its officers, directors, or other personnel for good faith compliance with such requests for information. This covenant shall survive termination or expiration of this Agreement.

2.14. Maintain required immunizations consistent with DUHS policy and all applicable federal, state, and local laws and regulations.

2.15. Timely and successfully complete GME Institutional Orientation.

3. Institutional Responsibilities. The Hospital has the following obligations:

3.1. To provide a stipend and benefits to the Trainee as outlined in section 5.

3.2. To provide, within available resources, an educational training program that meets the ACGME's accreditation standards.

3.3. To provide, within available resources, the Trainee with adequate and appropriate support staff and facilities in accordance with federal, state, local and ACGME requirements.

3.4. To orient the Trainee to the facilities, philosophies, rules, regulations and policies of the Hospital and the institutional, Common and Program Requirements of the ACGME.

3.5. To provide the Trainee with appropriate and adequate supervision for all educational and clinical activities.

3.6. To maintain an environment conducive to the health and well-being of the Trainee.

3.7. To provide adequate and appropriate patient and information support services.

3.8. To evaluate, through the Program Director and Program faculty, the educational and professional progress and achievement of the Trainee on a regular and periodic basis. The Program Director shall present to and discuss with the Trainee a written summary of the evaluations at least once during each six month period of training and/or more frequently if required by the Program Residency Committee, Hospital, Program Director, North Carolina Medical Board, or other agency as deemed appropriate.

3.9. To provide a fair and consistent method for review of the Trainee's concerns and/or grievances, without the fear of reprisal.

3.10. Upon satisfactory completion of the Program and its requirements as well as Hospital's Trainee responsibilities and with termination of GME Trainee status, to furnish to the Trainee a Certificate(s) of Completion of the Program(s).

3.11. To allow access to information related to eligibility for specialty board examinations, available at http://www.abms.org/abo_registrar/specialties.aspx

4. Duty Hours

4.1. The Trainee shall perform his/her duties under this Agreement during such hours as the Program Director may direct in accordance with the Duty Hour Policy, available at www.gme.duke.edu. Duty hours, although subject to modification and variation depending upon the clinical area to which the Trainee is assigned and/or exigent circumstances, shall be in accordance with federal, state, institutional, and ACGME requirements.

4.2. If a scheduled duty assignment is inconsistent with this Agreement or the Duty Hours Policy, the Trainee shall bring the inconsistency first to the attention of the Program Director for reconciliation or cure. If the Program Director does not reconcile or cure the inconsistency, it shall be the obligation of the Trainee to notify the Office of Graduate Medical Education who shall inform the Director of Graduate Medical Education and the GME Representative who shall take the necessary steps to reconcile or cure the raised inconsistency.

4.3. Report duty hours in a timely and accurate manner to the Office of Graduate Medical Education.

4.4. Moonlighting: Unauthorized, extracurricular, professional activities are inconsistent with the educational objectives of training program requirements as specified by the ACGME, and, therefore, are prohibited. However, the responsibility for determining whether any proposed moonlighting activity (internal or external) or temporary special medical activity is authorized or unauthorized rests with the Departmental Chair, Program Director and Director of Graduate Medical Education, (or designee). Internal and external moonlighting must be included and reported as part of a Trainee's duty hours. Certain extracurricular medical activities (moonlighting) are not covered by the Hospital's professional medical malpractice insurance. Trainee acknowledges that DUHS shall not provide professional liability insurance as outlined in Section 5.4 of this Agreement to Trainee for any unauthorized, extracurricular, professional activities.

5. Financial Support and Benefits. The Hospital shall provide the Trainee with financial support and benefits in the following areas as described.

5.1. Stipend: payable monthly. Financial support (stipend and fringe benefits) at a uniform level for all trainees in each year of graduate medical education training. Except as permitted in section 4.4, this shall be the Trainee's sole source of compensation. Except for approved and authorized extracurricular activities, the Trainee shall not accept from any other fee of any kind for services.

5.2. Services: Uniforms, parking, access to food services 24 hours a day, and sleep/rest facilities available for Trainees on-call in the Hospital.

5.3. Vacation and leave time consistent with the policies of the Program, Department, Hospital, DUHS, and state and federal laws.

5.3.1. Leaves of Absence. The Trainee expressly acknowledges that additional training after a leave of absence may be needed for successful completion of Program Requirements and/or for Board certification requirements. The amount of sick leave, leave of
absence, or disability time that will necessitate prolongation of the training time for the Trainee shall be determined by the Program Director and the requirements of the pertinent Residency Committee and/or certifying Board.

5.4. Professional Liability Insurance. The Hospital shall provide the Trainee with professional liability insurance coverage while the Trainee is acting within the scope of his/her assigned program activities, and tail coverage (detailed information available from Risk Management). In connection with the professional liability coverage provided by the Hospital:

5.4.1. The Trainee agrees to cooperate fully in any investigations, discovery, and defense that may arise. The Trainee's failure to cooperate may result in recovation of insurance coverage.

5.4.2. If the Trainee receives, or anyone with whom the Trainee works receives on his/her behalf, any summons, complaint, subpoena, or court paper of any kind relating to activities in connection with this Agreement or the Trainee's activities at the Hospitals, the Trainee agrees to immediately report this receipt to Risk Management and submit this receipt to Risk Management in the following:

5.4.3. The Trainee agrees to cooperate fully with DUSHS Administration and Risk Management in connection with the following:
(a) evaluation of patient care; (b) review of an incident or claim; (c) preparation for litigation, whether or not the Trainee is a named party to that litigation.

5.5. Other Additional Benefits. (see GME website www.gme.duke.edu)

5.5.1. Health, Dental, and Vision Benefits. Hospital and health insurance benefits are offered to Trainees and their families with available coverage from the first recognized day of training. It is the Trainee's obligation to select and enroll in the benefit program(s) he/she desires.

5.5.2. Life Insurance.

5.5.3. Long Term Disability Insurance.

5.5.4. Workers' Compensation.

5.5.5. Confidential support services including confidential counseling, medical, and psychological support services.

5.5.6. Physician Impairment and Substance Abuse. The Hospital agrees to provide the Trainee with information regarding physician impairment, including substance abuse, and shall inform the Trainee of Hospital policies for handling physician impairment, including intervention related to substance abuse.

5.6. Discontinuation of Benefits. The Hospital reserves the right to modify or discontinue the plan of benefits set forth herein at any time. Any such change cannot be made without first advising the affected insured.

6. Reappointment & Promotion to Subsequent PGY Level. The duration of this Agreement is for the academic year (2016 - 2017), not to exceed the fiscal year. Re-appointment and/or promotion to the next level of training is conditional upon:
1. satisfactory completion of all training components as mandated by the Program and the Institution;
2. the availability of a position;
3. full compliance with the terms of this Agreement;
4. the continuation of the Hospital's and Program's accreditation by the ACGME;
5. the Hospital's financial ability;
6. fulfillment of Hospital objectives, and
7. satisfactory performance evaluations and documentation of passage of appropriate licensing examinations. The Program maintains a confidential record of the evaluations in accordance with North Carolina law pertinent to peer review (NC GS 131E-85).

6.1. In the event the Program Director or DUSHS elects not to re-appoint the Trainee to the Program or promote to the next training level, the Program Director will provide the Trainee with a written notice of that intent in accordance with the provisions of the Corrective Action and Hearing Procedures for Associate Medical Staff, available at www.gme.duke.edu. The Trainee shall be entitled to invoke the procedure for review of the decision not to renew the contract for graduate medical training, or the decision not to promote to the next level of training, if the Trainee so elects.

6.2. In the event non-reappointment is based on reasons other than the Trainee's performance, the Grievance and Redress Policy, available at www.gme.duke.edu, describes the Hospital obligations to the Trainee.

7. Grievance Procedures. The Trainee is encouraged to seek resolution of grievances relating to his/her appointment or responsibilities, including any difference between the Trainee and the Hospital and/or Program and any representative thereof, with respect to the interpretation of, application of, or compliance with the provisions of this Agreement, available at www.gme.duke.edu.

8. Corrective Action, Dismissal and Suspension. During the term of this Agreement, the Trainee's appointment is conditional upon satisfactory performance of all Program elements by the Trainee. If the actions, conduct, or performance, professional, academic, or otherwise, of the Trainee is deemed by the Hospital, Office of Graduate Medical Education or Program Director to be inconsistent with the terms of this Agreement, the Hospital's standards of patient care, patient welfare, or the objectives of the Graduate Medical Education Program, and the Hospital has reasonable cause to believe that such actions, conduct, or performance reflects adversely on the Program or Hospital or disrupts operations at the Program or Hospital, corrective action may be taken by the Hospital, Director of Graduate Medical Education and Program Director as set forth in the Corrective Action and Hearing Procedures for Associate Medical Staff (a copy of which is available online at www.gme.duke.edu).

9. Reporting Obligations. Nothing herein shall affect or interfere with any right or obligation of Duke University, the Program, any Hospital, or the Associate to make any report pursuant to state or federal law.

10. Miscellaneous.

10.1. Taxes. The Hospital shall deduct appropriate items including FICA (Social Security) and applicable federal, state, and city withholding taxes. In the event the Trainee participates in any approved out-of-state or international rotations or other activities, the Trainee hereby acknowledges that such participation may result in additional tax liability for the Trainee. The Hospital will work with the Trainee to coordinate the withholding and/or payment of such amounts in accordance with the policies, protocols and procedures of Duke University Hospital.

10.2. Overpayments and Restitution. In the event that any amounts are paid to the Trainee that are in excess of the compensation or other amounts due and payable to the Trainee under this Agreement, the Trainee will immediately report such overpayments to the Office of Graduate Medical Education and will promptly refund such overpayments to the Hospital, as directed by the Office of Graduate Medical Education.

10.3. Restrictive Covenants. The Hospital, and its Graduate Medical Education Programs, will not require trainees to sign a noncompetition guarantee.

10.4. Severability. In the event any provision of this Agreement is held to be unenforceable for any reason, that unenforceability shall not affect the remainder of this Agreement, which shall remain in full force and effect and shall be enforceable in accordance with its terms.

11. The Trainee by signing this agreement, agrees to protect the confidentiality, privacy and security of patient, student, personnel, business and other confidential, sensitive electronic or proprietary information (collectively, "Confidential Information") of Duke University, Duke University Health System and the Private Diagnostic Clinic (collectively, "Duke") from any source and in any form (talking, paper, electronic).

11.1. The Trainee understands that the kinds of Confidential Information that he/she may see or hear on the job and must protect include the following, among others:

11.1.1. PATIENTS AND/OR FAMILY MEMBERS (such as patient records, conversations and billing information);

11.1.2. MEDICAL STAFF, EMPLOYEES, VOLUNTEERS, STUDENTS, or CONTRACTORS (such as social security numbers,
11.1.3. BUSINESS INFORMATION (such as financial records, research or clinical trial data, reports, contracts, or computer programs, technology);

11.1.4. THIRD PARTIES (such as vendor contracts, computer programs, technology); and

11.1.5. OPERATIONS, PERFORMANCE IMPROVEMENT, QUALITY ASSURANCE, MEDICAL OR PEER REVIEW (such as utilization, data reports, quality improvement, presentations, survey results).

11.2. Moreover, the Trainee (“I”) agrees that:

11.2.1. I WILL protect Duke Confidential Information in any form. I WILL follow Duke policies, procedures and other privacy and security requirements.

11.2.2. I WILL NOT post or discuss any Duke Confidential Information, including patient information, patient pictures or videos, Duke financial or personnel information on my personal social media sites such as Facebook or Twitter. I WILL NOT take any pictures of patients for personal use with my cell phone or similar methods. I WILL NOT post Confidential Information including patient pictures on Duke-sponsored social media sites without the appropriate patient authorization in accordance with management approval and Duke policies and procedures.

11.2.3. I WILL complete all required privacy and security of Confidential Information training.

11.2.4. I WILL ONLY access information that I need for my job or service at Duke.

11.2.5. I WILL NOT access, show, tell, use, release, e-mail, copy, give, sell, review, change or dispose of Confidential Information unless it is part of my job or to provide service at Duke. If it is part of my job or to provide service to do any of these tasks, I will follow the correct procedures (such as shredding confidential papers using confidential, Shred-it lock bins, lock bins) and only access/use the minimum necessary of the information to complete the required task.

11.2.6. When my work or service at Duke ends, I will not disclose any Confidential Information, and I will not take any Confidential Information with me if I leave or am terminated.

11.2.7. If I must take Confidential Information off Duke property, I will do so only with my supervisor’s permission and in accordance with Duke policies and procedures. I will protect the privacy and security of the information in accordance with Duke policies and procedures, and I will return it to Duke.

11.2.8. If I have access to Duke computer system(s), I WILL follow their Secure System Usage Memos, which are available from the System’s Information Security Administrator(s).

11.2.9. I WILL NOT use another’s User ID (Net ID) and password to access any Duke system, and I will not share my User ID (Net ID) password or another computer password with anyone.

11.2.10. I WILL create a strong password and change it in accordance with Duke policies and procedures. I will notify DHTS Security Office and change my password at once if I think someone knows or used my password. I will ask my supervisor if I do not know how to change my password.

11.2.11. I WILL tell my supervisor and OIT or DHTS if I think someone knows or may use my password or if I am aware of any possible breaches of confidentiality at Duke.

11.2.12. I WILL log out or securely store my workstation when I leave the computer unattended.

11.2.13. I WILL ONLY access Confidential Information at remote locations with consent from my supervisor.

11.2.14. If I am allowed to remotely access Confidential Information, I AM RESPONSIBLE for ensuring the privacy and security of the information at ANY location (e.g., home, office, etc.).

11.2.15. I WILL NOT store Confidential Information on non-Duke systems including on personal computers/devices.

11.2.16. I WILL NOT maintain or send Confidential Information to any unencrypted mobile device in accordance with Duke policies and procedures and procedures.

11.2.17. I UNDERSTAND that my access to Confidential Information and my Duke e-mail account may be audited.

11.2.18. If I receive personal information through Duke e-mail or other Duke systems, I AGREE that authorized Duke personnel may examine it, and I do not expect it to be protected by Duke.

11.2.19. I UNDERSTAND that Duke may take away or limit my access at any time.

11.2.20. I UNDERSTAND that the annual vaccination against influenza is a condition of employment at DUHS. Staff who choose not to be vaccinated or otherwise do not declare an acceptable exemption face disciplinary action up to and including termination from employment.

12. I understand that my failure to comply with this agreement may result in the termination of my relationship with Duke and/or civil or criminal legal penalties. By signing this, I agree that I have read, understand and will comply with this agreement in addition to all the other terms of this Trainee Agreement.

13. I understand that my training program may require that I participate in providing clinical care at Duke Regional Hospital, Duke Raleigh Hospital, and other Health System hospitals, facilities and/or programs. This statement is to authorize Duke University and Duke University Health System, Inc. to provide any information including, but not limited to, information from my personnel file as maintained by the Office of Graduate Medical Education at Duke University Hospital, insurance and claims history information, and any other information relating to my service as a graduate medical trainee at Duke University Hospital to these facilities.

14. Entire Agreement: Unless otherwise expressly set forth herein, this Agreement embodies the complete agreement and understanding between the Parties hereto with respect to the subject matter hereof and supersedes and preempts any prior understanding of the Parties, written or oral, which may have been related to the subject matter hereof in any way.

15. Forum: Both Trainee and DUHS hereby irrevocably and unconditionally (i) consents to submit to the exclusive jurisdiction of the courts of the State of North Carolina for any proceeding arising in connection with this Agreement and each such Party agrees not to commence any such proceeding, except in such courts, and (ii) waives any objection to the laying of venue of any such proceeding in the courts of the State of North Carolina.

__________________________
Trainee Signature

__________________________
Program Training Director Signature

__________________________
Dr. Catherine M. Kuhn
Director of Graduate Medical Education
Program Benefits

Meetings
The cardiothoracic residents will be sponsored to attend one Academic Meeting (AATS, STS, ACS, AHA, WTSA or ACC) annually at the expense of the Division and one course.

The academic meeting schedule is created in July. No more than 3 CT residents from Duke Hospital rotations (including only 1 CT2 resident) may attend a given meeting.

Except when specified, travel for meetings should include a Saturday evening, in order to obtain the most reasonable airline fares.

Vacations
Each resident is allotted two (2) one-week vacations during the academic year, the first week July-December, and the second week Jan-June. The week must be requested in advance to avoid conflicts with scientific meetings and other vacations.

Each “one-week” vacation actually extends from Saturday morning after clinical responsibilities are met and ends the following Monday morning at 6 AM.

Vacation schedules must be approved in advance by Dr. D’Amico.

FMLA / Disability Leave
The Family and Medical Leave Act (FMLA) entitles a covered employee to take up to 84 days of unpaid leave in a 12-month period for the birth or adoption of a child, or the "serious health condition" of the employee or the employee's child, spouse, or parent. If at all possible, the resident must make the request for FMLA and all associated paperwork prior to the precipitating event. The resident must inform the Program Director and the Program Coordinator at the earliest awareness of such a need. For FMLA approval, the resident should seek consultation with the EOHS, or ask his/her treating clinician to send documentation of an FMLA qualifying condition and recommendation for time away to the EOHS. The EOHS will then communicate the approval of the leave to the program director. FMLA can be taken in a full block or in smaller increments as determined by the clinician who provides care in conjunction with the EOHS or his/her designee.

Call Rooms
Call rooms are located on 3200 and DMP 7W. Showers are located in the DMP 7W call suite.

Meals
- **Grill – Monday, Tuesday, Thursday, Friday, Saturday**
  - Grilled Chicken Sandwiches
  - Hamburgers & Cheeseburgers
  - Veggie Burgers
  - Turkey Burgers
  - Daily Grill Specials

- **Grill – Wednesday and Sunday – Breakfast Menu**
  - Fried or Scrambled Eggs, Omelets and Breakfast Sandwiches
  - Waffles & Pancakes
  - Bacon, Sausage, Grits, Home Fries, and Biscuits.

- **Soup – Two Daily Selections**
- **Grab-and-Go Items**
  1. Fresh Sushi
  2. Yogurt & Parfaits
  3. Salads & Sandwiches
  4. Prepackaged Snacks
  5. Specialty Juices & Drinks
  6. Desserts

*All other convenience items will be available for sale as well.*

Subway and Starbucks in the North Atrium are open 24 hours.
# House Staff Health Care, Dental & Vision Premiums

**Effective January 1, 2016**

## Duke Select (HMO Model) Premiums

<table>
<thead>
<tr>
<th></th>
<th>Individual</th>
<th>Employee/Child</th>
<th>Employee/Children</th>
<th>Employee/Spouse</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Premium</td>
<td>$422.00</td>
<td>$628.00</td>
<td>$786.00</td>
<td>$950.00</td>
<td>$1,157.00</td>
</tr>
<tr>
<td>Duke Contribution</td>
<td>$422.00</td>
<td>$526.00</td>
<td>$604.00</td>
<td>$704.00</td>
<td>$787.00</td>
</tr>
<tr>
<td>Employee Premium</td>
<td>$0.00</td>
<td>$102.00</td>
<td>$182.00</td>
<td>$286.00</td>
<td>$370.00</td>
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## Duke Basic (HMO Model) Premiums

<table>
<thead>
<tr>
<th></th>
<th>Individual</th>
<th>Employee/Child</th>
<th>Employee/Children</th>
<th>Employee/Spouse</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Premium</td>
<td>$358.00</td>
<td>$526.00</td>
<td>$656.00</td>
<td>$826.00</td>
<td>$955.00</td>
</tr>
<tr>
<td>Duke Contribution</td>
<td>$358.00</td>
<td>$501.00</td>
<td>$675.00</td>
<td>$870.00</td>
<td>$749.00</td>
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<tr>
<td>Employee Premium</td>
<td>$0.00</td>
<td>$25.00</td>
<td>$81.00</td>
<td>$156.00</td>
<td>$207.00</td>
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## Blue Care (HMO Model) Premiums

<table>
<thead>
<tr>
<th></th>
<th>Individual</th>
<th>Employee/Child</th>
<th>Employee/Children</th>
<th>Employee/Spouse</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Premium</td>
<td>$776.00</td>
<td>$1,031.00</td>
<td>$1,171.00</td>
<td>$1,442.00</td>
<td>$1,726.00</td>
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<tr>
<td>Duke Contribution</td>
<td>$714.00</td>
<td>$841.00</td>
<td>$911.00</td>
<td>$1,045.00</td>
<td>$1,168.00</td>
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<tr>
<td>Employee Premium</td>
<td>$62.00</td>
<td>$190.00</td>
<td>$260.00</td>
<td>$397.00</td>
<td>$538.00</td>
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## Duke Options (PPO Model) Premiums

<table>
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<th>Employee/Children</th>
<th>Employee/Spouse</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Premium</td>
<td>$738.00</td>
<td>$935.00</td>
<td>$1,170.00</td>
<td>$1,435.00</td>
<td>$1,663.00</td>
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<tr>
<td>Duke Contribution</td>
<td>$681.00</td>
<td>$811.00</td>
<td>$899.00</td>
<td>$1,028.00</td>
<td>$1,152.00</td>
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<tr>
<td>Employee Premium</td>
<td>$57.00</td>
<td>$184.00</td>
<td>$271.00</td>
<td>$407.00</td>
<td>$531.00</td>
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</table>

## Dental Premiums*

<table>
<thead>
<tr>
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<th>Individual</th>
<th>Employee/Child</th>
<th>Employee/Spouse</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPO PLAN PREMIUM</td>
<td>$38.44</td>
<td>$74.71</td>
<td>$76.93</td>
<td>$116.45</td>
</tr>
<tr>
<td>PLAN A PREMIUM</td>
<td>$42.11</td>
<td>$81.80</td>
<td>$64.25</td>
<td>$127.55</td>
</tr>
<tr>
<td>PLAN B PREMIUM</td>
<td>$12.18</td>
<td>$24.82</td>
<td>$24.37</td>
<td>$45.24</td>
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</tbody>
</table>

## Vision Premiums*

<table>
<thead>
<tr>
<th></th>
<th>Individual</th>
<th>Employee/Child</th>
<th>Employee/Children</th>
<th>Employee/Spouse</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN PREMIUM</td>
<td>$9.66</td>
<td>$18.49</td>
<td>$19.46</td>
<td>$18.50</td>
<td>$29.97</td>
</tr>
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*Same as Non-House Staff Rates