DIVISION OF CARDIOVASCULAR AND THORACIC SURGERY REPORT 2016

UNIVERSITY OF KENTUCKY
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Every year, the University of Kentucky Cardiovascular and Thoracic Surgery division conducts an overall review and sets forth with a new set of goals. Circumstances may require changes to those goals from time to time, but always with respect to advancing the three foundational constants of academic medicine: Clinical Care, Education, and Research.

If the division’s 2016 annual review mentioned only the resumption of a pediatric cardiothoracic program at UK HealthCare, we could consider the year a significant triumph. The partnership between UK HealthCare and Cincinnati Children’s Hospital, however, has even greater significance. Combining resources and faculty, our two locations will become a major national hub for advanced pediatric cardiovascular, thoracic, and heart transplant procedures. Families in multiple states will benefit from this partnership. With the appointment of James Quintessenza, MD, as chief of pediatric cardiothoracic surgery at Kentucky Children’s Hospital, our shared concept of a one program, two sites model has become a reality.

In addition to this significant development, the division continues to recruit excellent new faculty to the University of Kentucky. Jordan Miller, DO, signed with UK just prior to completing a fellowship in minimally invasive thoracic surgery at Brigham and Women’s Hospital in Boston. His practice commenced on February 1st. Another board certified thoracic surgeon, Jonathan Kiev, MD, has also accepted an appointment within the division, and his practice is expected to begin April 2017. More faculty are projected to start even later in the year.

Our research and clinical collaborations with the Gill Heart Institute, Saha Cardiovascular Research Center, Markey Cancer Center, and in particular, the UK Transplant Center continue to thrive. In terms of clinical performance, a recent tally of procedures shows that UK provided 102 ECMO, 31 Ventricular Assist Devices (VAD) implants, 25 lung transplants and 43 heart transplants - matching our record of heart transplants from 2015.

The division’s I-6 residency and surgical fellowship programs were re-accredited by the ACGME in January 2017. With regard to our surgical training programs, I have been gratified by the progress our residents and fellows have made developing their skills and contributing to scholarly activities such as publishing articles in peer-reviewed journals and book chapters.

Even after training, our fellows continue to forge mutually beneficial relationships within the CT Division. Case in point, former chief fellows Jeremiah Martin, MD, and Marion Hochstetler, MD, are now UK CT Surgery faculty members. We are also fully engaged in training I-6 residents at Southern Ohio Medical Center in Portsmouth, Ohio. First year I-6 resident, Peter Rodgers-Fischl, MD, completed the first rotation with them in January.

CT Surgery continues to engage in robust clinical research initiatives. Many of our longstanding projects are bearing fruit. Others are being continuously appraised and refined. In every key measure of an academic medical program, the division proudly continues to represent the highest goals of UK HealthCare and its service to Kentucky. It is my pleasure to present this overview of our work as it has developed over the past year and show how it will propel us forward in 2017.

Sibu P. Saha, MD, MBA
Professor of Surgery and Bioengineering
Chief, Division of Cardiovascular and Thoracic Surgery
Frank C. Spencer Endowed Chair of Surgery
Program Director, Residency and Fellowship
Chairman, Gill Heart Institute Director’s Council
Email: ssaha2@uky.edu | Phone: 859-257-8250
WHAT WE DO

CARDIOVASCULAR AND THORACIC SURGERY SERVICES

- Robotic (da Vinci) surgery
- Transcatheter Aortic Valve Replacement (TAVR)
- Minimally invasive approach to Left Atrial Appendage Exclusion procedure (LAA)
- Minimally invasive MAZE procedure for treatment of atrial fibrillation
- Endovascular procedures, including repair of aneurysms
- Complex, reoperative surgeries

**General Thoracic Surgery Services**
- Video-assisted lung surgery
- Robotic surgery for mediastinal tumor
- VAT-assisted esophageal surgery
- Navigational bronchoscopy

**Heart Failure, Transplant & Mechanical Circulatory Support Services**
- Heart and lung transplantation
- Ventricular assist devices
- Extra Corporeal Membrane Oxygenation (ECMO)
- Endobronchial Ultrasound Biopsy (EBUS) for staging of lung cancer
ADULT CARDIAC SURGERY CASES, 2016

As UK HealthCare has grown, the scope and breadth of CT surgery has expanded exponentially. With a long-standing dedication to excellence and innovation, our cardiovascular services continue to become more comprehensive with a deeper level of expertise.

For patients whose atrial fibrillation (AF) cannot be managed through medications or catheter-based ablation, Theodore Wright, MD, provides expertise in the innovative and minimally invasive MAZE procedures. The video-assisted MAZE procedure includes creation of lines of conduction that block the abnormal impulses to cause AF, enabling restoration of normal sinus rhythm.

Michael Sekela, MD, continues to bring his extensive skill and experience to complex cardiac surgery, reoperative procedures and innovative valve surgeries.

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**Dr. James Quintessenza** joins us from Johns Hopkins All Children’s Hospital in St. Petersburg, Florida, as our new chief of pediatric cardiothoracic surgery. Dr. Quintessenza received his undergraduate degree in Medical Science and his Doctor of Medicine at the University of Florida in Gainesville, where he also did his general surgery internship and residency. He completed his cardiothoracic surgery residency at the University of California in San Diego.
GENERAL THORACIC SURGERY

UK HealthCare’s thoracic surgeons adopted minimally invasive techniques more than 20 years ago and today perform video-assisted and robotic surgery for lung, mediastinal and esophageal diseases.

Our faculty collaborates with an integrated patient-centered care team that includes pulmonologists, medical and radiation oncologists, gastroenterologists, and critical care medicine specialists. As part of a multidisciplinary thoracic oncology team, treating lung and esophageal cancers, our surgeons see patients at the Markey Cancer Center, a National Cancer Institute-designated cancer treatment center.

UK’s areas of expertise cover all aspects of pulmonary, tracheal, chest wall, mediastinal, esophageal and upper abdominal surgery.

To ensure the best possible outcomes, we offer patients a variety of treatment options:

- Surgical resection, including:
  - Minimally invasive (VATS) surgery.
  - Robotic (da Vinci) assisted surgery.

- Collaboration with ENT, plastic surgery and other specialists for complex reconstructions.

- Interventional bronchoscopy and endoscopic palliation of airway and esophageal obstruction, including laser therapy, balloon dilation and stenting.

- Targeted radiotherapy.

- Opportunities to participate in ongoing clinical trials.

Our thoracic surgery program also provides care at regional locations in Kentucky such as Danville and Rockcastle.

**TOTAL THORACIC SURGERY CASES, 2016**

<table>
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<th>Category</th>
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<tr>
<td>VATS</td>
<td>239</td>
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<tr>
<td>MEDIASTINAL</td>
<td>132</td>
</tr>
<tr>
<td>ESOPHAGEAL/FOREGUT</td>
<td>48</td>
</tr>
<tr>
<td>THORACIC ROBOTIC</td>
<td>3</td>
</tr>
<tr>
<td>OTHER</td>
<td>334</td>
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</table>
The UK Transplant Center completed 43 adult heart transplants in 2016, easily eclipsing the previous record for the most heart transplants performed by a Kentucky medical center in a single year. We are the only full-service transplant center serving Central and Eastern Kentucky, though many patients come to us from elsewhere for treatment not offered at hospitals in their home state. Transplant patients benefit from our expert, multidisciplinary approach to evaluation, treatment and management of advanced heart failure.

The collaboration between our surgeons and heart failure specialists, Maya Guglin, MD, and Navin Rajagopalan, MD, allows for coordinated care for patients across Kentucky and in bordering states. Advanced heart failure clinics are held in West Virginia and UK’s cardiac transplant program works in partnership with hospital systems outside of Kentucky to list patients for heart transplant.

“Heart Failure, Transplant & MCS

At UK, we’re able to offer a wide range of services for heart problems, from the very common heart bypass procedures for blockages to the more difficult, intricate procedures like VADs or transplants for advanced heart failure. The commitment UK HealthCare has made to the program over the years has made a difference in the lives of many patients and their families.”

— MICHAEL SEKELA, MD
CARDIOVASCULAR AND THORACIC SURGERY FACULTY

**Sibu P. Saha, MD, MBA,**
Professor of Surgery and Bioengineering  
Chief, Division of Cardiovascular and Thoracic Surgery  
Frank C. Spencer Endowed Chair of Surgery  
Program Director, Residency and Fellowship  
Chairman, Gill Heart Institute Director’s Council  
**Fellowship in CT Surgery**  
Medical University of South Carolina  
**Clinical Expertise**  
• Thoracic and vascular surgery

**Maher A. Baz, MD**  
Professor of Surgery  
Medical Director, Lung Transplant  
**Fellowship in Pulmonary Disease**  
Duke University  
**Clinical Expertise**  
• Frailty  
• Lung transplant outcomes

**Anil Gopinath, MD**  
Assistant Professor of Medicine  
Director, Adult ECMO  
**Fellowship in Sleep Medicine**  
Cleveland Clinic Foundation  
**Fellowship in Pulmonary Critical Care Medicine**  
University of Missouri School of Medicine and Cleveland Clinic Foundation  
**Clinical Expertise**  
• Critical care medicine  
• Pulmonary Medicine  
• Sleep medicine

**Research Interest**  
• Device therapy for resistant hypertension  
• Stem cell therapy for PAD  
• Hemostatic agents

**Special Interest**  
• Business of medicine  
• Surgical education  
• Student research and mentoring

**Awards**  
Abraham Flexner Master Educator Award

**Victor Ferraris, MD, PhD, FACS**  
Tyler Gill Professor of Surgery  
**Fellowship in CT Surgery**  
Letterman Army Medical Center  
San Francisco, CA  
**Clinical Expertise**  
• General thoracic and vascular surgery

**Research Interest**  
• Hemostatic agents  
• Platelet function in lung cancer

**Special Interest**  
• Blood conservation and transfusion management

**John C. Gurley, MD**  
Professor of Medicine and Surgery  
Medical Director of the Structural Heart Program and Interventional Cardiology  
**Fellowship in Cardiology**  
University of Kentucky  
**Clinical Expertise**  
• Coronary, structural heart and vascular interventions  
• Transcatheter valve procedures
<table>
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<tr>
<th>Name</th>
<th>Title</th>
<th>Fellowship</th>
<th>University/Institution</th>
<th>Clinical Expertise</th>
<th>Research Interest</th>
<th>Special Interest</th>
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</table>
| Angela L. Mahan, MD         | Assistant Professor of Surgery             | Fellowship in CT Surgery                    | University of Kentucky                                     | • General thoracic surgery  
• Minimally invasive surgery for lung and esophageal diseases                          | Process of care in lung cancer patients                                                                                                             | • Foregut surgery  
• Surgical education of medical students                                                                                                             |
| Ashish P. Maskey, MD        | Assistant Professor of Medicine            | Fellowship in Pulmonary and Critical Care Medicine | Cleveland Clinic Foundation                                |                                                                                     |                                                                                                                                  | • Lung cancer screening  
• Kentucky Clinical Trials Network                                                                                                                     |
| Jordan Miller, DO           | Assistant Professor of Surgery             | Fellowship in Thoracic Surgery              | Brigham and Women's Hospital/Harvard Medical School, Boston | • Minimally invasive surgery for lung, esophagus and foregut  
• Advanced endoscopy                                                                   |                                                                                                                                  | • Minimally invasive surgery outcomes  
• Enhanced recovery after thoracic surgery                                                                                                               |
| Timothy W. Mullett, MD      | Professor of Surgery                       | Fellowship in CT Surgery                    | University of Florida                                        |                                                                                     |                                                                                                                                  | • Airway involvement in systemic disease  
• Bronchothermoplasty for asthma  
• Complex airway disease/central airway obstruction  
• Lung Cancer  
• Pleural Disease  
• Tracheobronchomalacia                                                                                                                               |
| James A. Quintessenza, MD   | Chief, Pediatric Cardiothoracic Surgery    | Fellowship in CT Surgery                    | University of California, San Diego  
School of Medicine                                    |                                                                                     |                                                                                                                                  |                                                                                                                                  |
| Hassan Reda, MD             | Associate Professor of Surgery             | Fellowship in CT Surgery                    | University of Texas Medical Branch at Galveston             | • Coronary artery revascularization  
• Aortic and mitral valve surgery  
• Aortic aneurysm surgery  
• Minimally invasive valve surgery  
• MitraClip                                                                                                                                          | • Prevention of acute kidney injury in patients undergoing high-risk cardiac surgery  
• Transcatheter aortic valve replacement                                                                                                                |
Michael Sekela, MD, FACS
Professor of Surgery
Surgical Director, Heart Transplant
Fellowship in CT Surgery
University of Kentucky
Clinical Expertise
• Adult heart surgery
• Reoperative/complex cardiac surgery
• Transmyocardial revascularization
Research Interest
• Regenerative medicine; stem cell therapy in conjunction with transmyocardial laser revascularization (TMLR)

Paul B. Tessmann, MD, Pharm D
Assistant Professor of Surgery
Fellowship in Critical Care Surgery
University of Iowa Hospitals and Clinics
Fellowship in Thoracic Surgery
University of Florida College of Medicine
Clinical Expertise
• Cardiothoracic Surgery
• Heart transplant
• Lung transplant
• Mechanical circulatory support

Theodore S. Wright, MD
Assistant Professor of Surgery
Fellowship in CT Surgery
University of Wisconsin
Fellowship in Cardiopulmonary Transplant
University of California-San Francisco, School of Medicine
Clinical Practice
• Adult heart surgery
• Atrial fibrillation
Research Focus
• Minimally invasive surgical management of atrial fibrillation
Special Interest
• MAZE procedure for the treatment of atrial fibrillation
• Robotic mitral valve surgery
Awards and Special Recognition
• Holds two patents for medical devices; five additional medical device patents pending

Joseph Zwischenberger, MD
Johnston-Wright Professor and Chairman
Department of Surgery
Fellowship in CT Surgery
University of Michigan
Fellowship in Extracorporeal Membrane Oxygenation/Critical Care
University of Michigan
Clinical Expertise
• General thoracic surgery
Research Interest
• Oxygenation and CO2 removal during acute respiratory failure
• Extracorporeal circulation
Special Interest
• Surgical education
• Ambulatory ECMO
Awards and Special Recognition
• Board President, Lexington Chapter of the American Heart Association
CARDOVASCULAR AND THORACIC RESEARCH FACULTY

Cherry Ballard-Croft, PhD
Assistant Professor
Postdoctoral Fellow in Pharmacology
University of Texas Southwestern
Research Fellow in Surgery
University of Texas Southwestern

Research Interest
• Mitogen-activated protein kinase
• Ischemia/reperfusion
• Heart and cavopulmonary support

Special Interest
• Systemic hyperthermia system for late-stage lung cancer treatment

Dongfang Wang, MD, PhD
Associate Professor
Fellowship in CT Surgery
Union Hospital & Institute of Cardiovascular Diseases of Tongji Medical University, Wuhan, PR China
Research Fellow:
University of Texas Medical Branch

Research Interest
• Artificial lung
• Extracorporeal membrane oxygenation
• Ventricular assist devices

Special Interest
• Medical device research and development
• Respiratory failure: acute respiratory distress syndrome (ARDS)

Awards and Special Recognition
• Holds four patents for medical devices; three additional medical device patents pending

ADVANCED PRACTICE PROVIDERS, NURSES AND SUPPORT STAFF

The Division of Cardiothoracic Surgery employs staff, nurses, physician assistants and advanced practice providers to deliver high-quality continuity of care that emphasizes patient safety.

These team members provide essential point-of-care solutions in various settings including outpatient clinics, operative procedures, intensive care and telemetry areas.

Alysia Adams, APRN
Jessica Co, APRN
Michael Dugan, PA-C
Micah Groves, PA-C
Harold Michael Jenks, APRN
David Jones, PA-C
William Meadors, PA-C
Larissa Spurgeon, APRN
Holly Stilz, PA-C
Christina Thurston, PA-C
Kelly Weaver, APRN
Paula Works, APRN
The CT Surgery Division continues to enhance and expand its reputation as a center for training, research and education. Our trainees receive superb clinical training at UK HealthCare, Lexington VA Medical Center, UK Good Samaritan Hospital, Hazard ARH Regional Medical Center, St. Claire Regional Medical Center and Southern Ohio Medical Center. Our faculty is committed to the education of medical students as well as general surgery residents and CT surgery fellows. Residents and additional surgery trainees, including PAs and APRNs, also rotate through our service.

For more than 40 years, UK has trained CT surgery fellows from across the country. Our graduates have gone on to become board certified in cardiothoracic surgery and are now gainfully employed in outstanding academic centers, as well as in private practice.

We have the following residents currently in our I-6 program: Peter Rogers-Fischl (PGY1), Erinn Ogburn (PGY2), Tyler Gunn (PGY3) and Michael Bolanos (PGY4). Tessa Cartwright has joined the fellowship program as a PGY6, and Hetal Patel is a PGY7. UK was one of 27 academic centers across the country to have both I-6 residents and a traditional fellowship.

Our dedicated faculty mentors our residents and fellows throughout their training experience and exposes them to a variety of cases so that they are competent in the depth and breadth of cardiothoracic procedures. We also expose them to our multidisciplinary, team-based approach to optimize patient care, allowing our trainees to develop excellent communication skills with patients, families and other healthcare professionals. An additional aspect of their training is a robust and comprehensive schedule of teaching conferences that feature many nationally recognized speakers.

For more information about our program, contact Melissa Banks Residency Program Coordinator, at melissa.banks@uky.edu or call 859-323-5443.
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<tr>
<th>Sponsor</th>
<th>Study</th>
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<tr>
<td>Exatherm</td>
<td>An Early Feasibility Study of Perfusion-Induced Hyperthermia for Metastatic Non-Small Cell Lung Carcinoma</td>
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<td>Baxter</td>
<td>Effectiveness and Safety of CELSTAT as an Adjunct to Hemostasis for Tissue Bleeding in CT, General and Vascular Surgery</td>
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<td>Bayer</td>
<td>Vascular Outcomes study of ASA along with rivaroxaban in Endovascular or surgical limb Revascularization for PAD</td>
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<td>Investigator</td>
<td>Intramyocardial Application of Stem Cells in Combination with Transmyocardial Laser Revascularization (TMLR)</td>
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<td>Platelet Function in Early Stage Lung Cancer- A Pilot Study</td>
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<td>Cardiothoracic Resident and Fellow Operative Autonomy</td>
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<td>Endocarditis, A Retrospective Review of Outcomes</td>
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<td>The Impact of Blood Transfusion in Blunt and Penetrating Trauma</td>
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<td>A Retrospective Review and Comparison of Open Thoracotomy Versus Video-assisted Thoracic Surgery (VATS) Lobectomy from 2009-2013</td>
<td>Saha</td>
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<td>A Retrospective Review Comparing Outcomes of Iliac Artery Stenting Performed by Surgeons in an Operating Room Versus in a Catheterization Lab</td>
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<td>Retrospective Review of Esophageal Stents at the University of Kentucky</td>
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<td>A Retrospective Review of Surgical Outcomes of Aortic Root Reconstruction</td>
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<td>Retrospective Review of Endovascular treatment for completely occluded Abdominal Aorta</td>
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<td>A Retrospective Review of Tricuspid Valve Surgery Patients with an AICD</td>
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<td>A Retrospective Review of Common Femoral Endarterectomy and Profundoplasty at the University of Kentucky</td>
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<td>A Retrospective Review of Extracorporeal Membrane Oxygenation (ECMO) after Lung Surgery at the University of Kentucky</td>
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<td>Investigator</td>
<td>A Retrospective Review of University of Kentucky Management of Pulmonary Arteriovenous Malformations</td>
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<td>Investigator</td>
<td>Blood Loss after Tracheostomy in Patients Supported on Extracorporeal Membrane Oxygenation</td>
<td>Shafii</td>
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<td>Investigator</td>
<td>A Retrospective Review of Thoracoscopic MAZE Procedure in Various Patient Populations at the University of Kentucky</td>
<td>Wright</td>
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<td>Investigator</td>
<td>A Retrospective Review of X-ray Guided Bedside Placement of Dual Lumen Venovenous ECMO Cannula at the University of Kentucky</td>
<td>Tessmann</td>
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PUBLICATIONS – 2016

Names in bold are CT Surgery faculty members.
Italicized names indicate student or resident author.
Names in blue are department faculty members from other divisions.


21. Alexander JV, Grulke EA, **Zwischenberger JB.** High levels of residue within polymeric hollow fibers used for blood oxygenation. ASAIO J 201 Nov/Dec;62(6):690-696. PMID: 27465094


26. **Ferraris VA.** Evidence and resident physician duty hours: Should scientific experiments be more suspect than universal implementation of an untested practice? J Thorac Cardiovasc Surg 2016 [epub ahead of print 2016 Nov 21].

**BOOK CHAPTERS**


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Dr. Dongfong Wang, left, and Dr. Jay Zwischenberger were granted their fifth patent for a medical device in October 2016. The new patent, No. 9,468,557, came as a result of their research on the use of hyperthermia as a support to chemotherapy in the treatment of certain forms of cancer.
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Kentucky Clinic
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Lexington, KY 40536
800-888-5533