MISSION
We advance health through research, education, clinical practice and community partnerships, providing each person the best care, in the right place, at the right time, every time.

VISION
Achieve the healthiest population possible, leading the transformation of health care in our region and setting the standard for our nation.
# TABLE OF CONTENTS

Message from the Chair .................................................. 2
Department of Surgery Sections .......................... 4
   Cardiothoracic Surgery .................................. 4
   Dermatology ............................................... 6
   General Surgery ......................................... 8
   Neurosurgery ........................................... 10
   Ophthalmology .......................................... 12
   Otolaryngology and Audiology ....................... 14
   Pediatric Surgery ......................................... 16
   Plastic Surgery ........................................... 18
   Transplantation Surgery ............................... 20
   Urology .................................................. 22
   Vascular Surgery ......................................... 24
   Surgical Research Lab .................................. 26
   Maxillofacial Surgery .................................. 28
Office of Surgical Education ............................... 29
   Medical Student Education Program ................. 29
   Dermatology Residency Training Program .......... 30
   Neurosurgery Residency Training Program .......... 31
   General Surgery Residency Training Program .... 32
   Otolaryngology Residency Training Program ...... 34
   Plastic Surgery Residency Training Program ...... 35
   Urology Residency Training Program ................ 36
   Vascular Surgery Residency Training Program .... 37
Surgery Awards .................................................... 38
Program Highlights ............................................. 40
   First Kidney Paired Donor Transplants ............ 40
   The Inaugural Department of Surgery Care Path Award .... 41
   Transcutaneous Aortic Valve Replacement (TAVR) ... 42
Clinical Trials and Research .................................. 44
Publications ..................................................... 47

---

# ADMINISTRATION

Richard Freeman, Jr, MD  
William N. and Bessie Allyn Professor and Chair  
Department of Surgery

Samuel Finlayson, MD  
Vice Chair, Academic Affairs & Faculty Development  
General Surgery Residency Program Director  
Associate Professor of Surgery, Community & Family Medicine, and The Dartmouth Institute

Kerry Ryan  
Director  
Administrative Associate in Surgery

Linda Barie  
Administrative Manager

Brett Buzzatto  
Web Content Producer

Audrey Carr  
Financial Manager

Jo-Ann Dugdale  
Administrative Assistant

John Higgins  
Data Center Manager

Donald Likosky, PhD  
Department Epidemiologist  
Assistant Professor of Surgery, Community & Family Medicine, and The Dartmouth Institute

Darrin Michalak, PA-C  
Care Path Administrator

Terri Nicholson  
Clerkship Program Coordinator

Laura Stancs  
Assistant to the Chair

Christina Stark  
Project Assistant III

# DEPARTMENT OF SURGERY PHYSICIAN ASSISTANTS

Torry Cobb, PA-C  
Instructor in Surgery

Priscilla Marsicovetere, PA-C  
Instructor in Surgery

A. Maya McSpadden, PA-C  
Instructor in Surgery
MESSAGE FROM THE CHAIR

2011 has been a highly productive and rewarding year for the Department of Surgery at Dartmouth-Hitchcock Medical Center despite the significant challenges we all face in the rapidly changing and uncertain world of health care today. As this report documents, we are molding our Department with as much anticipation as possible for the changes to come. We continue to emphasize improving our clinical efficiencies by maximizing surgeon productivity.

In addition, each of our sections continues to work on developing care paths that streamline and standardize the delivery of care, while reducing costs, for the routine procedures we do most frequently. On December 6th, we awarded the Department of Surgery’s “Care Path Award” to the Section of Otolaryngology for developing the best care path this year. This award will be an annual award to recognize the best efforts toward standardizing, measuring, and integrating our surgical care in the most efficient and innovative ways.

We have numerous initiatives underway which have taken shape over this past year, three of which we highlight here.

1) Transplant Program – David Axelrod, MD and the team gained national recognition this year for performing the very first donor exchange through a new national exchange program in cooperation with Washington University in St. Louis, MO.
2) The Care Path Award
3) TAVR Surgery – In 2011, DHMC was accepted into the second iteration of the largest trial of Transcutaneous Aortic Valve Replacement (TAVR) which places DHMC among a unique group of institutions that will have access to this therapy.

Other developments not highlighted here include our merging community surgery effort where surgeons have clinical responsibilities at local community hospitals and spend 1 or 2 days a week at DHMC. We believe this program will bring the highly-skilled academic surgeons to community practice sites. Not only will this be helpful for our community hospital partners, this effort will improve access for patients to top quality surgical care as well as offer new opportunities for teaching and research. Cardiothoracic Surgery, along with our colleagues in Cardiology, are developing a comprehensive program to care for patients with heart failure. Rajan Gupta and our Section of General Surgery have implemented an acute care surgery program consistent with the movement across the country to provide urgent or emergent care by surgeons specifically trained in this aspect of surgical care. This program will provide in-house faculty level surgical coverage 24/7 365 days a year for acutely ill patients. Along with this effort, we continue to develop more comprehensive approaches to surgical care across the D-H system through our regional meetings.

Dartmouth-Hitchcock is optimally positioned to take on the challenges we face in a changing health care environment. The Department of Surgery remains committed to delivering high value surgical care, teaching the next generation, and developing new and better ways to serve our patients.

Richard B. Freeman, Jr, MD
William N. and Bessie Allyn Professor and Chair
Department of Surgery

Kerry Ryan
Director, Department of Surgery

William N. and Bessie Allyn Professor and Chair
Department of Surgery
DEPARTMENT STATISTICS 2011

<table>
<thead>
<tr>
<th>Section</th>
<th>Faculty</th>
<th>Associate Providers</th>
<th>Residents</th>
<th>Clinical Trials and Research</th>
<th>Publications</th>
<th>Outpatient Appointments</th>
<th>OR Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audiology</td>
<td>7</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>9,519</td>
<td></td>
</tr>
<tr>
<td>CT Surgery</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td></td>
<td>7</td>
<td>2,832</td>
<td>862</td>
</tr>
<tr>
<td>Dermatology</td>
<td>7</td>
<td>6</td>
<td>19</td>
<td></td>
<td>2</td>
<td>24,187</td>
<td></td>
</tr>
<tr>
<td>General Surgery</td>
<td>21</td>
<td>3</td>
<td>33</td>
<td></td>
<td>20</td>
<td>12,277</td>
<td>3,254</td>
</tr>
<tr>
<td>Maxillofacial</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>1,242</td>
<td>158</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td></td>
<td>22</td>
<td>5,533</td>
<td>1,081</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>9</td>
<td>2</td>
<td>8</td>
<td></td>
<td>5</td>
<td>28,186</td>
<td>1,019</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td></td>
<td>7</td>
<td>14,319</td>
<td>2,030</td>
</tr>
<tr>
<td>Pediatric Surgery</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td></td>
<td>5</td>
<td>4,305</td>
<td>956</td>
</tr>
<tr>
<td>Plastic Surgery</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td></td>
<td>24</td>
<td>6,567</td>
<td>1,115</td>
</tr>
<tr>
<td>Transplantation</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td></td>
<td>20</td>
<td>2,626</td>
<td>312</td>
</tr>
<tr>
<td>Urology</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td></td>
<td>1</td>
<td>11,017</td>
<td>1,127</td>
</tr>
<tr>
<td>Vascular</td>
<td>10</td>
<td>1</td>
<td>5</td>
<td></td>
<td>77</td>
<td>6,543</td>
<td>970</td>
</tr>
<tr>
<td>Surgical Res. Lab</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Dept. of Surgery</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td></td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>101</td>
<td>35</td>
<td>67</td>
<td>102</td>
<td>272</td>
<td>129,153</td>
<td>12,884</td>
</tr>
</tbody>
</table>
Our continued involvement with the General Surgical Training Program and Dartmouth Medical School allows surgical residents and medical students to experience supervised training in a busy outpatient clinic, inpatient consult and critical care service, and operating room.

**The Division of Cardiac Surgery**
The Division of Cardiac Surgery continues to offer a full range of surgical procedures for patients with acquired adult cardiac diseases. This includes off-pump coronary revascularization, mitral valve repair, valve sparing aortic valve surgery, and various forms of left ventricular remodeling procedures. Our continued involvement in the Northern New England Cardiovascular Disease Study Group and participation in the Society of Thoracic Surgeons Cardiac Surgical Database insures that our outcomes are closely monitored and transparently displayed against institutional, regional, and national standards. We are proud to continue to demonstrate some of the best outcomes in the nation. Patients can now access and review our surgical outcomes by logging onto http://med.dartmouthhitchcock.org/heart_vascular/report_ct.html.

The Aortic Center at Dartmouth continues to thrive under the directorship of Anthony Discipio, MD. This multidisciplinary initiative offers patients with complex diseases of the thoracic and abdominal aorta, many of the most sophisticated surgical interventions performed today. Patients with life-threatening aortic diseases can now be evaluated and electively treated by the most advanced imaging and therapeutic modalities available and by a team of professionals dedicated to understanding and treating these conditions.

**Research within the Section of Cardiothoracic Surgery**
Research opportunities for faculty and residents continue within the Section. Under the direction of Joseph DeSimone, MD, we will soon be enrolling patients into the Partner’s 2 trial and thus DHMC will enter the era of percutaneous aortic valves. Dr. DeSimone also participates in a large animal laboratory study looking at the effects of pulsatile perfusion on organ systems. Finally, outcomes research remains through our collaboration with The Northern New England Cardiovascular Disease Study Group and participation in the Society of Thoracic Surgeons Cardiac Surgical Database.
Cardiovascular Disease Study Group (NNE) cardiac surgical database. The General Thoracic Division participates with the Norris Cotton Cancer Center and the multi-institutional national oncology research organization, Cancer and Leukemia Group B (CALGB). This provides our patients’ access to the most innovative cancer treatments available and our residents and staff to participate in many institutional and national treatment protocols. Under the direction of Cherie Erkmen, MD, the Division of Thoracic Surgery has begun a basic science research initiative studying immunofluorescence tumor marking in malignancies and made available clinical research opportunities through our clinical outcomes registry and membership in the Society of Thoracic Surgeons Thoracic Surgical Database.

**Outcomes and the Future of Healthcare**

Cardiac surgery remains the most scrutinized specialty in all of medicine. Since healthcare payers and their patients have insisted on increased accountability and transparency in outcomes, the Section of Cardiothoracic Surgery has responded by making our surgical outcomes transparent to the public. DHMC now provides patient access to our surgical outcomes in a patient-friendly format (http://med.dartmouthhitchcock.org/heart_vascular/report_ct.html).

This initiative, combined with our continued involvement with the Northern New England Cardiovascular Disease Study Group (www.nnecdsg.org), makes the Section of Cardiothoracic Surgery an international leader in understanding and improving healthcare outcomes.

**FACULTY**

**CARDIAC SURGERY**

M. Adam Christopher, PA-C  
Instructor in Surgery

Curtis Cote, PA  
Instructor in Surgery

Lawrence Dacey, MD  
Professor of Surgery and Community & Family Medicine

Joseph DeSimone, MD  
Assistant Professor of Surgery

Anthony DiScipio, MD  
Assistant Professor of Surgery

Jamie McCormack, PA  
Instructor in Surgery

James Yun, MD  
Assistant Professor of Surgery

**THORACIC SURGERY**

Cherie Erkmen, MD  
Assistant Professor of Surgery and Medicine

Elizabeth Maislen, APRN  
Instructor in Surgery

David Johnstone, MD  
Associate Professor of Surgery

Anne McGowan, PA  
Instructor in Surgery

William Nugent, Jr, MD  
Professor of Surgery, Community & Family Medicine, and The Dartmouth Institute

**Cardiothoracic Surgery Gross Professional Revenue**

- FY06: $16M
- FY07: $14M
- FY08: $12M
- FY09: $10M
- FY10: $8M
- FY11: $6M
- FY12: $4M
- FY13: $2M

**Cardiothoracic Surgery Cases**

- FY06: 1,000
- FY07: 800
- FY08: 600
- FY09: 400
- FY10: 200
- FY11: 100
**Introduction**

This year our introduction to the Section has many accomplishments to share. First, our Residency Training Program has successfully been accredited by the RRC for the next three years, which is the best outcome possible. We have hired a new Mohs surgeon, Faramarz Samie, MD, a new medical dermatologist, Dorothea Torti, MD, and our first dermatology physician assistant, Kari Marley, PA. Nine months into the new fiscal year, we are at 111% of 60th percentile RVU benchmark. Plans to move into the new medical office building on Heater Road in Lebanon continue, and the details of the space are being worked out. We are still on schedule to move in the fall of 2012.

**Patient Care**

Dermatology outpatient care still has the highest volume of any section at DHMC, and we are continuing to find ways to increase patient access and improve our efficiency in the Clinic. We have begun several new “spot clinics” at DHMC as well as opened a new monthly derm clinic at Kendal at Hanover. The addition of Dr. Samie, our new Mohs surgeon, will immediately improve our access for skin care patients. We are planning on doubling this volume in one year and adding a second Mohs surgeon during this time (1,400 to 1,800 cases per year). We are continuing all of our subspecialty clinics. Our focus is not only to provide high quality dermatology care, but also efficient, high-value care for specific patient care needs.

**Education**

Our Dermatology Residency Training Program is stable, newly accredited, and moving upward. Kathryn Zug, MD has provided a clear expectation for our residents and a renewed focus on academia. Our goal this year is to have a seventh resident, in addition to our stable six residents, which will be a valuable asset to our educational and patient care missions. Moving forward, we are considering increasing our residency group to nine (three-per-year), adding both Pediatric Dermatology and Mohs Surgery Fellowships.

**Research**

Our Section continues to participate in multiple industry-sponsored clinical trials. After going through a research coordinator change, Carol Moriarty, RN is now in place and ready to quickly expand our volume of dermatology studies, both industry-sponsored and investigator-initiated research.

**Faculty Highlights**

Denise Aaron, MD is the Co-Course Director of a very successful annual Dartmouth Dermatology Conference for Practitioners in Primary Care. Richard Baughman, MD has begun his 51st year of service as a physician at the Dartmouth-Hitchcock Clinic. He is down to one-day a week, but is still very productive, enthusiastic, and motivated. M. Shane Chapman, MD was named Section Chief of Dermatology in June 2011. Marshall Guill, MD continues to be our most steady, productive medical dermatologist. Nicole Pace, MD is our pediatric dermatologist. Kathy Zug, MD is our residency director. She has implemented and continues to develop our most specialized dermatology clinics in cutaneous T-cell lymphoma (combined with Hematology and Oncology) and contact dermatitis.

**Looking to the Future**

We have overcome several obstacles in the past ten months and are now poised to grow our staff, residency, and fellowship programs as we prepare to move into our new medical office building.
Our short-term goals include expanding our residency program from six to a total of seven residents, rapidly re-establishing and expanding our Mohs Surgery Program, adding a telemedicine/teledermatology component to both patient care and teaching at a regional level, improving our academic output, and continuing to improve our clinical trials program, both in volume and quality of studies.

In addition to improving existing programs and adding to our educational and research productivity, we are also committed to making the Section of Dermatology a leader in outpatient clinical efficiency in both patient volume and efficient use of resources, especially our human resources. We are also committed to maintaining patient satisfaction and quality of care.

In addition to improving existing programs and adding to our educational and research productivity, we are also committed to making the Section of Dermatology a leader in outpatient clinical efficiency in both patient volume and efficient use of resources, especially our human resources. We are also committed to maintaining patient satisfaction and quality of care.

FACULTY

DERMATOLOGY

Denise Aaron, MD
Assistant Professor of Surgery

Richard Baughman, MD
Professor of Surgery

M. Shane Chapman, MD
Associate Professor of Surgery

Marshall Guill, MD
Assistant Professor of Surgery

Nicole Pace, MD
Assistant Professor of Surgery

Daniel Stewart, MD
Instructor in Surgery

Kathleen Zug, MD
Professor of Surgery

<table>
<thead>
<tr>
<th>Dermatology Gross Professional Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>$16M</td>
</tr>
<tr>
<td>FY06</td>
</tr>
</tbody>
</table>
Introduction
The Section of General Surgery, on a daily basis, strives to accomplish DHMC’s mission: to advance health through research, education, and clinical practice, providing each patient the best care, in the right place, at the right time. We also strive to optimize the job satisfaction of each of our providers and staff, realizing this is essential for us to collectively accomplish our mission.

Major Initiatives
The implementation phase of a long-range plan which will transform the way we deliver care for trauma patients and patients with acute general surgery conditions has begun. We envision having a total of nine acute care/trauma surgical faculty, doubly boarded in critical care and surgery, with 24/7 in-house availability to provide optimal patient care. Our goal is to have the resources to be a first-rate referral center for acute surgical care for our region.

Two new acute care surgeons joined our faculty this summer: Eric Martin, MD is a 2010 graduate of our surgical training program who completed a fellowship at Maryland Shock Trauma, and Andrew Crockett, MD who completed his residency and critical care fellowship at Ohio State.

We have initiated a new model for integrated surgical care with our neighboring community hospitals. Dartmouth general surgeons have begun, for the first time, to evaluate and operate on patients in the community hospital setting. We hope to optimize patient care by providing ambulatory “bread and butter” surgical care in the community setting, while fostering referrals to the academic center for more complicated elective and acute surgical conditions. Timothy Siegel, MD, who had been practicing in a similar model at Mary Imogene Bassett Hospital, joined our faculty this summer to lead this effort.

Patient Care
General Surgery patients continue to be very satisfied with the care they receive. Eighty percent of all patients felt that their provider’s clinical skills and personal manner were excellent.

The Division of Minimally Invasive Surgery has been performing laparoscopic bariatric surgery for many years with extremely low leak rates and excellent weight loss outcomes. They have received well-deserved recognition for their work by being designated by the American College of Surgeons as a Center of Excellence for bariatric surgery.

The Division of Surgical Oncology has greatly enhanced its care of breast cancer patients by establishing an interactive session with breast radiologists immediately prior to our office visits. We have collaborated with DH-Manchester to hire a full-time breast surgeon, Roshini Patel, MD in Manchester. One year after initiating a multidisciplinary clinic for patients with pancreatic cancer, we observed that the time from diagnosis to treatment was markedly improved from one month to one week. Kerrington Smith, MD, one year out of his fellowship at MD Anderson, has established himself as a technically excellent and compassionate provider for these challenging patients.

Education
Paul Kispert, MD and Kari Rosenkranz, MD, having demonstrated their passionate commitment to resident education through years of unheralded teaching, have been chosen to succeed Samuel Finlayson, MD as Residency Program Director and Associate Director, respectively. Dr. Kispert enhances all of our education by leading the Morbidity and Mortality conference with insight and humor. Horace Henriques, MD and Ken Burchard, MD are implementing a new curriculum for medical student teaching. William Laycock, MD continues to direct a thriving fellowship in laparoscopic surgery. Dr. Burchard is well on his way towards obtaining approval for a new Surgical Critical Care Fellowship. All four graduating chief residents this year entered fellowship training: in trauma surgery (U. Penn), vascular surgery (Einstein), and plastic surgery (Florida and Philadelphia).

Research
The Section continued to add new knowledge to the surgical literature this past year with 31 peer-reviewed publications. Dr. Finlayson served as an excellent mentor for surgical residents interested in outcomes research, publishing papers on the treatment of appendicitis in rural vs urban settings, and on lap vs open colectomies. Burton Eisenberg, MD authored studies of neoadjuvant chemoradiotherapy for treatment of sarcoma and a review article on the management of patients with GI stromal tumors. Richard Barth, MD published a clinical trial utilizing a dendritic cell vaccine to induce anti-tumor immune responses in patients with colorectal...
cancer, demonstrating that patients who developed an immune response against their own tumor had a greater recurrence free survival. Justin Reeves, MD, a resident working with Dr. Barth, presented a clinical study which demonstrated that a short-term pre-op diet decreased steatosis in patients undergoing liver surgery. Dr. Rosenkranz is the Principal Investigator on a new breast cancer clinical trial which has been activated by the National Oncology Trial Group Alliance. Drs. Rosenkranz and Barth published results on the use of breast conserving surgery for the treatment of patients with multicentric breast cancer and reported on the long-term complications seen after Mammosite brachytherapy.

Faculty Highlights
Dr. Smith was honored as the inaugural recipient of the Richard W. Dow Career Development Award in Surgery. This award funds protected time for Dr. Smith to develop a murine model which will allow him to grow human pancreatic xenografts and test their chemoresponsiveness. Dr. Rosenkranz and John Murray, MD were chosen as the Top Surgeons in their specialties by NH physicians, as reported in NH Magazine. Gina Adrales, MD combined clinical care and extra study to receive a master’s degree from The Dartmouth Institute. Several Section members are playing prominent roles in national organizations: Rajan Gupta, MD is Chair of the Rural Trauma Committee of the Eastern Association for Trauma and serves on the American College of Surgeons Committee on Trauma; Thadeus Trus, MD is leading the international laparoscopic training efforts of SAGES; and Drs. Barth and Kispert have leadership roles in the New England Surgical Society.

Looking Ahead
The Section looks forward to cooperation with community hospitals in our area to regionalize acute general surgical care.
Introduction
The Section of Neurosurgery expanded its clinical programs, diversified its investigative activities, and earned a number of resident awards in 2011. It was a full, productive, and successful year.

Patient Care
Clinical productivity again exceeded budget for operative cases, wRVUs per clinical provider, and contribution margin. Multidisciplinary programs in Neuro-oncology, Spine, Skullbase, Pituitary, Epilepsy, Stroke, Peripheral Nerve, Pain, and Radiosurgery coordinated increasingly complex patient management and surgery across the field. New multidisciplinary clinical programs in extracranial radiosurgery (with Radiation Oncology) and Spine Tumor (with Orthopedics) were initiated. Care Paths in brain tumor and in acoustic neuroma are far along in development. Expansion of our clinical activity to the Southern Region has been initiated, with the establishment of regular outpatient clinics in Manchester. In the departmental initiative to achieve cost savings, the Section, spearheaded by Nathan Simmons, MD and together with the Department of Orthopedics achieved a 15% reduction in expenses through standardization of spinal instrumentation hardware.

Education
Our fully accredited Neurosurgical Residency Program once again had an outstanding year in the national match, with the arrival of Jennifer Hong, MD from Stanford University School of Medicine. Our graduating resident, Tarek Radwan, MD gained a Spine Fellowship at the University of Washington. Kimon Bekelis, MD pursued and published studies on intracranial seizure localization, fluorescence assisted meningioma resection, and extracranial carotid and vertebral artery disease. Atman Desai, MD received a CNS Resident Travel Award for the 2010 Congress of Neurological Surgeons Fall Annual Meeting for his work on “outcomes after incidental durotomy during surgery for spinal stenosis,” receiving one of the highest scoring abstracts submitted by a resident. Student sub-intern rotations and our elective for first and second year DMS students were again popular, and faculty participation in Dartmouth’s Undergraduate Shadow Program kept the hallways young. In the spring, Rodrigo Moragues, MD, chief resident in neurosurgery in Montevideo, spent a month with the service, continuing our long-standing relationship with Uruguay’s growing epilepsy program.

Research
Kimon Bekelis, MD earned the prestigious Congress of Neurological Surgeons Dandy Fellowship to study inflammation in cerebral aneurysms under the mentorship of Kadir Erkmen, MD. William Spire, MD presented an analysis of radiosurgery alone for the treatment of intracranial metastatic disease, Dr. Desai investigated dural leaks in spine surgery, Wes Whitson, MD wrote on confocal microscopy in fluorescent meningioma, and George Kakoulides, MD presented an analysis of evoked potential monitoring in aneurysmal surgery. Jessica Swienckowski, DMS II, received an NREF Summer Fellowship Award from the AANS to work with Scott Lollis, MD on magnetic resonance elastography in hydrocephalus. Ziev Moses, DMS IV, who spent the year studying the relationship between microvascular density and 5-ALA-induced fluorescence in gliomas, won Best Poster in the Tumor Section at our national 2011 CNS meeting. Not least, Pablo Valdes, DMS MD/PhD candidate, who successfully defended his PhD thesis this past year, is currently spending a post-doc year in Neurosurgery before rejoining his MD classmates. He won Best Student Poster Award at the Optical Society of America Conference, and is developing multi-spectral imaging systems for the operating microscope to see tumor fluorescence at...
depth. Bringing together colleagues at the Thayer School, the Norris Cotton Cancer Center, Neuropathology and Neuroradiology, as well as collaborators at the University of Toronto and now Georgetown, our NIH-sponsored fluorescence-guided brain tumor resection project extended the technology’s utility to low-grade gliomas and other tumors through development of quantitative fluorescence. Independently, the journal Stereotactic and Functional Neurosurgery, edited out of Dartmouth, saw further increase in its volume of submitted manuscripts and its Impact Factor.

**Faculty Highlights**

Our newest faculty member, Dr. Lollis is taking time from his busier than expected clinical practice and his MR elastography research to serve as a Major in the US Army Reserve in Iraq. Stateside, Drs. Simmons, Perry Ball, Kadir Erkmen, and David Roberts all gave invited talks at our CNS and AANS national meetings. Dr. Ball was elected President of the New England Neurosurgical Society and is serving on the Executive Committee of the Neurosurgical Society of America and on the AANS Professional Liability Committee. Dr. Erkmen was elected Treasurer of the International Meningioma Society and Member-at-Large of the Executive Committee of the AANS/CNS Cerebrovascular Section. Both Drs. Simmons and Durham had strongly competitive finishes in the Eastman Splash, Mash, Dash Triathlon and the Spartan Race-Vermont, respectively. Dr. Roberts was elected a Mosenthal Fellow by the 2011 graduating class of DMS and vice-president of the Society of Neurological Surgeons; he continues his tenure on the American Board of Neurological Surgery.

**Looking Ahead**

Recruitment of an additional pediatric neurosurgeon to complement Susan Durham, MD is eagerly anticipated and well underway. The initiative to expand our presence in the Manchester area will soon have all faculty engaged throughout the Southern region. Lastly, Neurosurgery is enthusiastic about the realization of the Advanced Surgical Center, whose intraoperative imaging and research capabilities will enhance our long-standing commitment to clinical excellence, superior training, and cutting-edge investigation.

---

**FACULTY**

**NEUROSURGERY**

Perry Ball, MD
Associate Professor of Surgery and Anesthesiology

Kadir Erkmen, MD
Assistant Professor of Surgery and Neurology

S. Scott Lollis, MD
Assistant Professor of Surgery

Amber Merrill, APRN
Instructor in Surgery

Sharon Morgan, APRN
Instructor in Surgery

David Sargent, PA
Instructor in Surgery

Nathan Simmons, MD
Assistant Professor of Surgery

Joellen Speaker, MSPA
Instructor in Surgery

---

**Neurosurgery Gross Professional Revenue**

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>$5M</td>
</tr>
<tr>
<td>FY07</td>
<td>$15M</td>
</tr>
<tr>
<td>FY08</td>
<td>$20M</td>
</tr>
</tbody>
</table>

**Neurosurgery Cases**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>200</td>
</tr>
<tr>
<td>FY07</td>
<td>400</td>
</tr>
<tr>
<td>FY08</td>
<td>600</td>
</tr>
<tr>
<td>FY09</td>
<td>800</td>
</tr>
<tr>
<td>FY10</td>
<td>1,000</td>
</tr>
<tr>
<td>FY11</td>
<td>1,200</td>
</tr>
</tbody>
</table>
Introduction
With the aging population, we are seeing increased incidence of eye disease. This past year, the Section of Ophthalmology provided services for over 20,000 patient visits. The Section is providing primary, secondary, and tertiary eye care, with subspecialty care in neuro-ophthalmology, pediatrics, glaucoma, oculoplastics, vitreo-retina, and cornea. We also offer state-of-the-art cataract and laser refractive surgery. Our team includes two optometrists offering complete primary eye care, contact lens wear, and low vision evaluations and treatment.

Patient Care/Faculty Highlights
Michael Zegans, MD provides surgical care for patients with complex corneal disorders and uveitis syndromes. Donald Miller, MD provides onsite laser refractive surgery (LASIK) for farsighted and nearsighted patients and has achieved superb visual outcomes. The advent of toric intraocular lenses now has a role in selected patients with cataract and refractive disorders.

David Campbell, MD serves as Director of The Glaucoma Service. This year he is joined by Ronald Swendris, MD who was in a private ophthalmic group practice in Missouri prior to joining DHMC.

Susan Pepin, MD serves as Director of Neuro-Ophthalmology and works closely with the Department of Neurology, seeing those patients that have neurological disorders affecting the ocular system. In addition, she is a skilled cataract surgeon, often performing surgery on complex cataract patients. For the past two years, she has been the Chief of Diversity at Dartmouth Medical School and as of July, 2011, she has been promoted to Associate Dean at DMS.

Christopher Chapman, MD and Rosalind Stevens, MD provide comprehensive medical and surgical expertise for patients with complex disorders of the retina, vitreous and macula, including trauma, and laser treatment for premature infants with retinopathy of prematurity. Crystal Colby, PA is now part of the team, assisting in patient evaluation and surgery.

This past year, we were fortunate to have Erin Salcone, MD join the Section to provide comprehensive pediatric ophthalmology care and adult strabismus surgery. She was a medical student at DMS before doing her residency and fellowship at Mass Eye and Ear, and Children’s Hospital in Boston.

In addition to being Section Chief, William Rosen, MD provides comprehensive ophthalmic care as well as expertise in diseases of the eyelid, orbit, and lacrimal system. He is a diplomate of the American Society of Oculoplastics and Reconstructive Surgeons.

Peter Lapre, OD and Cynthia Lawrence, OD provide primary eye care and optometric services at our Court Street outreach office on the green in Lebanon, NH.

Education
All providers in the Section of Ophthalmology provide educational opportunities onsite at DHMC as well as regionally, nationally, and internationally. Dr. Stevens finished
her MPH degree in International Ophthalmology from Johns Hopkins, and is now an advisor for Global Programming for ORBIS, the flying eye hospital. Our vibrant grand rounds program features nationally recognized leaders in ophthalmology. Dr. Pepin serves as coordinator of medical student and resident education. Dr. Campbell continues to be an invited speaker at the Lancaster Ophthalmology Review Course. We are proud of our collective success in matching Dartmouth Medical School students each year to competitive ophthalmology residency programs.

**Clinical Trials and Research**

Dr. Zegans continues his research in epidemiology and microbiology and also is active in international eye care through the Dickey Center at Dartmouth, and through his association with the Aarivand Eye Hospital in India. Dr. Pepin conducts several clinical trials including therapeutic studies involving multiple sclerosis, Alzheimer’s disease, and ischemic optic neuropathy.

**Looking Ahead**

The Section of Ophthalmology is constantly striving to improve our patient access and satisfaction, while we deliver state-of-the-art treatments in the most cost-effective manner possible. The LASIK Program continues to strive for increased demand. The addition of Michael Barrington as our Practice Manager is helping us move forward. The principle three-year goal of the Section is starting a residency program. All of the faculty view education and teaching as part of their mission and all desire a residency training program.
Introduction
The Sections of Otolaryngology and Audiology continues to grow and improve to meet our patients’ needs and to fulfill our important role as a tertiary care provider of otolaryngology and audiology services for northern New England. Our residency in otolaryngology, now fully populated, has served as a catalyst for change across many key academic and clinical activities.

Patient Care
The theme over the past year has been comprehensive quality improvement. Our main projects include two Clinical Microsystem Improvement Projects, done in conjunction with the Microsystem group at The Dartmouth Institute, focused on ambulatory care for the rhinology and otology practices as well as a Clinical Care Pathway Project for the head and neck cancer patients. In addition, the Microsystem Projects have been augmented by our recent involvement with DHMC’s Value Institute. The overall goal is to provide every member of the Section with the tools that they need to either lead or participate in quality improvement projects. This initiative has been met with enthusiasm and a great deal of success. In December, we were quite proud to be the recipients of the Department of Surgery’s Care Path Award. We believe that this focus on continuous quality improvement will serve us well as we make the transition from fee-for-service medicine to the capitated payment schemes of accountable care organizations, allowing us to continue to thrive and provide the best care at the right time, every time.

We welcomed a critical new component of the Section’s leadership structure this year with the addition of Annette Tietz as our practice manager. Annette joins us with a wealth of specialty-specific leadership experience and has very quickly made a positive impact on the day-to-day operations within the Section.

Education
Our educational efforts are directed primarily toward the residency program. We now dedicate a total of 5 hours per week to didactic instruction for our residents. This is in addition to the countless hours of instruction that we provide during the course of clinical care. We continue to host the
Otolaryngology Interest Group from the medical school and also are involved in medical student education during the pediatric and family medicine clerkship blocks as well as the head and neck portion of the gross anatomy class.

Research
The Section continues to be well represented at our national meetings with multiple faculty members involved with presentation of scientific papers and serving on important committees. Notable achievements include Eunice Chen, MD’s continued success and development of basic science laboratory investigation, and James Saunders, MD’s involvement with research, policy making, and international outreach in the area of hearing loss. Dr. Chen was the recipient of the Dow-Crichlow Award this year which will support her research endeavors for the next two years.

FACULTY

OTOLARYNGOLOGY

Sharon Bry, APRN
Instructor in Surgery

Eunice Chen, MD
Assistant Professor of Surgery and Pediatrics

Louise Davies, MD
Assistant Professor of Surgery and The Dartmouth Institute

Peter Dixon, PA
Instructor in Surgery

JJ Benoit Gosselin, MD
Associate Professor of Surgery

Daniel Morrison, Jr, MD
Assistant Professor of Surgery

Joseph Paydarfar, MD
Associate Professor of Surgery

James Saunders, MD
Associate Professor of Surgery

Mark Smith, MD
Assistant Professor of Surgery and Pediatrics

Giridhar Venkatraman, MD
Assistant Professor of Surgery

AUDIOLOGY

Kerry Gudlewski, AUD
Instructor in Surgery

Julie Johnson, AUD
Instructor in Surgery

Maria Stella McHugh, MS
Instructor in Surgery

Katelyn Monaghan, MA
Instructor in Surgery

Leah Mosenthal, MEd
Instructor in Surgery

Michael Norris, AUD
Instructor in Surgery

Cynthia Nulton, MA
Instructor in Surgery

Ashley Perez, AUD
Instructor in Surgery

Erin Pospychala, CCC-A, SM
Instructor in Surgery

Catherine Rieke, AUD
Instructor in Surgery

Otolaryngology and Audiology Gross Professional Revenue

Otolaryngology Cases
Patient Care
Striving to provide outstanding surgical health care to the children we serve remains the primary mission of the Pediatric Surgical Specialties. We continue to offer outreach clinics in Manchester, Dover, and Nashua. Same Day Surgery is offered in the Main OR and the OSC in Lebanon and the Manchester Ambulatory Surgery Center. Implementation of the new electronic medical record will enable us to provide specific outcomes data in the near future.

Pediatric Trauma Program - In January, 2009, the American College of Surgeons verified the Pediatric Trauma Program at the Children’s Hospital at Dartmouth as a Level 1 Pediatric Trauma Center. This is the only ACS designated Level 1 Pediatric Trauma Center in northern New England. Laurie A. Latchaw, MD is the Pediatric Trauma Medical Director and Renee Gaffney, RN is the Pediatric Trauma Program Manager. The Pediatric Trauma Program has cared for more than 673 injured children since the ACS verification.

The Chest Wall Deformity Program - This Program, offered both in Lebanon and Manchester by Daniel Croitoru, MD, has evaluated 247 patients with Pectus Excavatum and 103 patients with Pectus Carinatum. Of these, 105 excavatum patients have had minimally invasive repair of their deformities. This service is offered to young adults as well as children and teenagers. Dr. Croitoru also participates in the newly-formed Marfan’s Clinic.

Minimally Invasive Surgery - Minimally invasive surgery continued to expand this past year and includes laparoscopic splenectomies, fundoplications, repair of malrotation, small bowel and colon resections, and appendicocoececostomies for motility problems in children with anorectal malformations. The surgical correction of Hirschsprung’s Disease can now often be accomplished without any abdominal incision via a transanal approach.

Peripheral Nerve Clinic – Susan Durham, MD continued the only coordinated care of children and adults with peripheral nerve problems in northern New England. This multidisciplinary clinic facilitates the proper diagnosis and treatment plan for these debilitating conditions.

Pediatric Brain Tumor Clinic - This multidisciplinary clinic involving Pediatric Neurosurgery, Pediatric Neurology, and Pediatric Neuro-oncology was instituted two years ago and continues to coordinate the surgical and medical care and follow-up of infants and children with brain and spinal cord tumors.

Spina Bifida Clinic - This clinic is one of the longest running multidisciplinary clinics at CHaD and includes the expertise of Dr. Durham and Scott Lannon, MSN, APRN, from neurosurgery as well as the pediatric urology team of Daniel Herz, MD, Leslie McQuiston, MD, Lynn Brenfleck, RN, urology nurse coordinator, and Bridget Logan, PhD, APRN, pediatric urology nurse practitioner.

Pediatric Genitourinary Robotic Surgery Program - Dr. Herz has expanded his use of the robot to include pyeloplasty, ureteral reimplants, orchidopexy, urachal cyst excision, and appendicocoececostomy. This is the only pediatric robotic program in northern New England.

Education
Medical education of our patients and families as well as present and future health care providers continues to be
a top priority of the Section. The Division of General and Thoracic Pediatric Surgery remains one of the core surgical teaching services for the third-year Dartmouth medical students. All three Divisions participate actively in residency training programs. Members of the Section gave various Grand Rounds five times and were invited national and international speakers three times this past year. Bridget Logan, PhD, APRN has been working on establishing a Nurse Practitioner Residence Program at DHMC and is on the clinical faculty of Northeastern University’s Nurse Practitioner Program.

Research
The Division of Pediatric Neurosurgery had three publications during 2010-11. The clinical research projects of the Division of Pediatric Urology resulted in five published papers and several meeting presentations. Ongoing clinical research projects in VUR disease and occult tethered cord continue to accrue patients. Pediatric General Surgery was involved with an interesting case and literature review accepted for publication in the Journal of Pediatric Surgery.

Faculty Highlights
Dr. Herz received a Department of Surgery scholarship to attend the Master's Degree Program at The Dartmouth Institute for Health Policy and Clinical Practice beginning in July, 2010. Bridget Logan, PhD, APRN earned her PhD degree and published her dissertation in January, 2010. Scott Lannon, MSN, APRN joined the Section in November, 2010, as the Pediatric Neurosurgery Nurse Practitioner assisting Dr. Durham. Lynn Brenfleck, RN became a member of the Society of Pediatric Urology Nurse Specialists.

Looking Ahead
The Pediatric Surgical Specialties is actively recruiting a second pediatric neurosurgeon at this time and hopes to fill that position in the next few months. We also will be preparing for the re-verification of the Level 1 Pediatric Trauma Program slated for November, 2011. Next year will be spent developing “best practices” for the surgical care of children using evidence-based data which can be used to set the standard of pediatric surgical care in New Hampshire and beyond.

<table>
<thead>
<tr>
<th>FACULTY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEDIATRIC GENERAL AND THORACIC SURGERY</strong></td>
</tr>
</tbody>
</table>
| Daniel Croitoru, MD  
  Associate Professor of Surgery and Pediatrics |
| Scott Lannon, MSN  
  Instructor in Surgery and Pediatrics |
| Laurie Latchaw, MD  
  Associate Professor of Surgery and Pediatrics |

| **PEDIATRIC NEUROSURGERY** |
| Susan Durham, MD  
  Associate Professor of Surgery and Pediatrics |

| **PEDIATRIC UROLOGY** |
| Daniel Herz, MD  
  Associate Professor of Surgery and Pediatrics |
| Bridget Logan, NP-C  
  Instructor in Surgery and Pediatrics |
| Leslie McQuiston, MD  
  Assistant Professor of Surgery and Pediatrics |
| Paul Merguerian, MD  
  Professor of Surgery and Pediatrics |

<table>
<thead>
<tr>
<th>Pediatric Surgery Gross Professional Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>$12M</td>
</tr>
<tr>
<td>FY06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pediatric Surgery Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,200</td>
</tr>
<tr>
<td>FY06</td>
</tr>
</tbody>
</table>
**Introduction**

Members in the Section of Plastic Surgery are committed to not only doing their jobs, but improving them for patients, our team, and themselves. Their willingness to do so has led to many successes being recognized by others who invite us to present our work on patient access, shared medical appointments, shared decision making, staffing redesign, and resource utilization (% booked in the clinic and OR).

**Patient Care**

We continue our work on creating a culture of patient and staff safety and satisfaction. With the implementation of our new electronic medical record and our need to measure meaningful use, we diligently worked through new patient and staff flow and care. It was challenging, yet the most rewarding work for us this year. As a result of this work, we saw continued improvement in patient access, clinical, OR, and OSC utilization, as well as bettering our patient mix. We have fine-tuned processes needed to measure and monitor these work efforts to be sure we can sustain the gains. We have enjoyed the camaraderie of sharing and learning across sections in 2011 and look forward to more of this in the year to come.

We were pleased when our contract provider, Emily Ridgway, MD, accepted our offer to become our newest faculty member in December of 2011. She is assisting us with strategic planning to develop a presence in the southern region with an initial focus on breast and Mohs surgery to meet the needs of patients there. We were also pleased to learn John Nigriny, MD accepted our offer to start full-time with us in January of 2012.

**Education**

Our ACGME accredited residency program graduated Gary Freed, MD this year, who we are thrilled to say accepted a full-time faculty position with us here in the Section of Plastic Surgery.

Michael Van Vliet, MD is now our Senior Resident. He continues with research interested in using comparative effectiveness outcome research to determine the cost effectiveness of plastic surgery cases. He is also interested in the use of outcome-based questionnaires in predicting diagnosis and treatment of common hand ailments, along with interests in critical care medicine in the area of burns.

New to our residency program this year was Tomasz Kosowski, MD whose research interests include constructing and implementing patient reported outcome measures in aesthetic and reconstructive facial and breast surgery. In addition, Abhishek Chatterjee, MD joined our residency program in July of 2011, having strong interest in Microsystems learnings, integrating cost savings for supplies in the inpatient arena in our practice.

**Research**

Carolyn L. Kerrigan, MD is collaborating with researchers from Memorial Sloan-Kettering to develop outcome measures for women undergoing breast surgery. She has also focused on clinical outcomes of needle aponeurotomy for Dupuytren’s and utilizing patient-reported outcomes in common hand problems as a bedside diagnostic tool. In addition, Dr. Kerrigan spent much of the year championing the transition of the electronic medical record to eD-H for both perioperative documentation and patient reported health history and outcomes questionnaires. Mitchell Stotland, MD is exploring perceptual response to facial difference; the effect of isolated muscle paralysis on emotional processing, and is involved in a new project evaluating a novel approach to total ear reconstruction.

Joseph Rosen, MD has a grant entitled, “Armed Forces Institute of
Regenerative Medicine (AFIRM);” is the Craniomaxillofacial Program Director for the Armed Forces Institute of Regenerative Medicine, Rutgers Cleveland Clinic Consortium; is on the Executive Committee of AFIRM; is Chair of the Clinical and Rehabilitative Advisory Team; and co-investigator on a grant focused on predicting surgical errors. He led an international surgical team to Vietnam and is developing a network-based telemedicine healthcare system for Vietnam called RICE (Remote Interaction Consultation Epidemiology and Reconstructive International Cooperation Exchange). Dr. Rosen teaches two courses at the Thayer School. Dale Vidal, MD is the PI on a multimillion dollar grant from the Foundation for Informed Medical Decision Making to integrate shared decision making in the breast, cardiology, and spine patient populations. She is an oversight committee member for the Clinical Translational Research Science Award (CTSA) currently under review. For this proposal, she is the co-PI on the section entitled, “Development of Novel Clinical and Translational Methodologies.” She also supports several junior faculty members as mentor on sponsored research developmental awards.

**Faculty Highlights**

Dr. Kerrigan is a trustee of the American Association of Plastic Surgeons and the trustee of the American Society of Plastic Surgeons. She is currently enrolled in the inaugural class of the Masters in Health Care Delivery Science program at Dartmouth College. Dr. Rosen was named Chief Medical Officer of AFIRM in 2011. Dr. Stotland was named Chair of CHaD Development Committee and was an Oral Board examiner for the American Board of Plastic Surgery this year. As Chief of the Section of Plastic Surgery, Professor of Surgery at DMS, Director of the Center for Informed Choice, and Medical Director of the Center for Shared Decision Making, Dr. Vidal is engaged in activities aimed at transforming local, regional, and national environments for clinical and translational science. As a leader in Health Care Transparency and Shared Decision Making, she was selected as the current curriculum committee chair for the new Masters of Health Care Delivery Science Program at Dartmouth. This role allows her the ability to effectively shepherd new advances in health care delivery and oversee quality improvement efforts in the use of health information technology systems and development of novel clinical and translational methodologies.

**Plastic Surgery Gross Professional Revenue**

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>$12M</td>
</tr>
<tr>
<td>FY07</td>
<td>$10M</td>
</tr>
<tr>
<td>FY08</td>
<td>$8M</td>
</tr>
<tr>
<td>FY09</td>
<td>$6M</td>
</tr>
<tr>
<td>FY10</td>
<td>$4M</td>
</tr>
<tr>
<td>FY11</td>
<td>$2M</td>
</tr>
</tbody>
</table>

**Plastic Surgery Cases**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>1,400</td>
</tr>
<tr>
<td>FY07</td>
<td>1,200</td>
</tr>
<tr>
<td>FY08</td>
<td>1,000</td>
</tr>
<tr>
<td>FY09</td>
<td>800</td>
</tr>
<tr>
<td>FY10</td>
<td>600</td>
</tr>
<tr>
<td>FY11</td>
<td>400</td>
</tr>
</tbody>
</table>

**FACULTY**

**PLASTIC SURGERY**

**Alison Evans, APRN**
Instructor in Surgery

**Gary Freed, MD**
Assistant Professor of Surgery

**Carolyn Kerrigan, MDCM, MSc**
Professor of Surgery and The Dartmouth Institute

**Emily Ridgway, MD**
Assistant Professor of Surgery

**Joseph Rosen, MD**
Professor of Surgery and Radiology

**Mitchell Stotland, MD, CM**
Associate Professor of Surgery and Pediatrics

**Dale Vidal, MD**
Professor of Surgery, Community & Family Medicine, and The Dartmouth Institute
Introduction
The Section of Solid Organ Transplantation provides comprehensive care to patients in northern New England with end-stage organ failure. In the past five years, the Section has experienced significant growth in the number of transplants we perform. In addition, we have been able to expand our clinical programs. The Section is actively involved in both clinical and outcomes research, national leadership roles within the major transplant organizations, and education for medical students, residents, and fellows.

Patient Care
Kidney Transplant: Our Program has continued to expand transplant services to patients living in northern New England. We have expanded services in the DH-Manchester clinic to better serve patients living in the southern part of the region. Patients can now complete their entire pre-transplant evaluation at DH-Manchester as well as have comprehensive follow-up care.

The DHMC Transplantation Program continues to grow with an emphasis on excellence of outcomes and improved patient quality of life. Through the appropriate use of living donor exchanges, and, most recently, the use of novel therapies to decrease antibody levels to permit selected cross match positive transplants, we are bringing state-of-the-art transplant care to northern New England. This last effort is led by Christopher Simpkins, MD, MPH who joined the Section from Johns Hopkins University as a transplant surgeon. Through his work at Hopkins, Dr. Simpkins brings unique expertise in ‘desensitization’ protocols and ABO blood group incompatible transplants.

Pancreas Transplant: DHMC has the largest pancreas transplant program in New England. As in our kidney program, pancreas patients are managed without corticosteroids. Immunosuppression is limited to two medications (tacrolimus and mycophenolate mofetil) and is well tolerated by our patients. We are pleased that our first pancreas recipient is over five years out and feeling very well. We are expanding our Program to include access to autoislet transplant for patients undergoing a total pancreatectomy for chronic pancreatitis. In cooperation with the Massachusetts General Hospital (MGH), we will isolate their islets, reinstate them in the liver, and reduce the incidence of post-operative diabetes.

Liver Transplantation and Hepatobiliary Surgery: At DHMC, we offer state-of-the-art care for patients with hepatocellular carcinoma, cirrhosis, or end-stage liver disease in our multidisciplinary liver care center. Here, surgeons, hepatologists, oncologists, and interventional radiologists participate in a shared medical appointment providing timely, integrated care on a weekly basis. Liver care has now expanded to include the evaluation and post-operative care of liver transplant patients in cooperation with the Lahey Clinic and MGH. This integrated program allows for seamless continuity between the northern evaluation team and the liver transplant programs. Led by the members of the Transplantation Section, the Program has seen and evaluated over 300 liver patients.

Education
The Transplantation Section remains committed to the education of students, residents, fellows, patients, and the community. Currently, fourth-year surgical residents spend three dedicated months on the transplant service participating in all aspects of the service. We also train nephrology fellows, urology residents, medical students, and have recently developed a new transplant medicine rotation for the internal
medicines residents. Michael Chobanian, MD, Medical Director of Transplantation, won an award for outstanding teaching.

For our patients, the Section continues to conduct outreach sessions and has sessions planned in Manchester, Portsmouth, and Nashua, NH. These sessions bring together health care professionals, local nephrologists, and transplant patients in community sessions designed to promote an understanding of transplant. Section faculty are again participating in the Dartmouth Medical School community.

Research:
The Transplantation Section has been active in research. An investigator-initiated research program, led by Drs. Zuckerman and Chobanian, has focused on immune reconstitution in immunosuppressed patients, with a specific focus on regulatory T cells. David Axelrod, MD has been funded by the NIH to examine strategies to decrease disparities in access to transplantation. Section research has recently been presented at the American Transplant Congress, the American Society of Nephrology, and the Winter Meeting of the American Society of Transplant Surgery.

Faculty Highlights
Members of the DHMC faculty are active in the national transplant community. Dr. Axelrod serves as the Chairman of the National Pancreas Transplant Committee of the United Network for Organ Sharing (UNOS) and has been appointed as Chairman of the Business Practice Development Committee of the American Society of Transplant Surgeons. Richard Freeman, MD, Chair of the Department of Surgery and member of the Transplantation Section, was recently elected as President of the International Liver Transplant Society in recognition of his long standing commitment to developing the art, science, and policies that govern liver transplantation in the US and abroad. He also serves as member of the UNOS Board of Directors setting national transplant policy. Dr. Chobanian recently completed his term as a member of the National Pediatric Transplant Committee of UNOS.

Looking Forward:
We anticipate continued growth in all aspects of the Transplantation Program. We continue to focus on improving patient outcomes and enhancing our ability to provide timely local care to patients in northern New England. We have embarked on expanded outreach and clinical activities in the Southern Region to ensure access to efficient care for patients in this area, and expanded cooperation with referring providers.

| FACULTY |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| **TRANSPLANTATION SURGERY** | | | | |
| David Axelrod, MD | Associate Professor of Surgery, Community & Family Medicine, and The Dartmouth Institute | | | |
| Michael Chobanian, MD | Associate Professor of Surgery and Pediatrics | | | |
| Richard Freeman, Jr, MD | Professor of Surgery | | | |
| Khalid Khwaja, MD | Instructor in Surgery | | | |
| Sarah Parmelee, FNP | Instructor in Surgery | | | |
| Christopher Simpkins, MD | Assistant Professor of Surgery | | | |

![Transplantation Surgery Gross Professional Revenue](image1)

<p>| Transplantation Surgery Cases |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|</p>
<table>
<thead>
<tr>
<th>FY06</th>
<th>FY07</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreas</td>
<td>Kidney</td>
<td>Other</td>
<td>Pancreas</td>
<td>Kidney</td>
<td>Other</td>
</tr>
</tbody>
</table>

DARTMOUTH-HITCHCOCK MEDICAL CENTER DEPARTMENT OF SURGERY ANNUAL REPORT 2011
BPH, upper urinary tract malignancies, and stone disorders is an example of the Section's ability to adopt state-of-the-art technology in the delivery of urologic surgical care.

Patient Care
The growth in the volume of renal surgeries and cystectomies performed at DHMC suggests that the comprehensive genitourinary oncological initiative is resonating with our patients and referring physicians. Our high risk bladder cancer quality improvement study demonstrates that the Section can provide timely consultation and treatment to a population of patients whose prognosis is dependent on speedy intervention.

With three experienced laparoscopic surgeons, the Section remains on the forefront of the minimally invasive approach to the treatment of genitourinary malignancies and benign disorders of the upper urinary tract. Faculty provide state-of-the-art surgical care to our prostate cancer patients with the aid of the da Vinci robotic surgical platform. Most nephrectomies and nephron-sparing nephrectomies are now performed with the aid of laparoscopic and robotic-assisted techniques. The PSA/prostate biopsy clinic and the metabolic stone clinic are examples of interdisciplinary endeavors providing “one stop consultative and diagnostic shopping” for men with elevated PSAs and abnormal digital rectal examinations and individuals with complex stone disease. The Section has recently inaugurated a dedicated hematuria clinic, streamlining the diagnostic approach to a common urologic complaint. The Minimally Invasive Ablative Therapy Program for solid renal masses, operated in conjunction with the Section of Interventional Radiology, offers radiofrequency and cryoablative energy programs for the treatment of renal lesions.

In an effort to deliver patient-focused ambulatory service, we have developed a provider/nursing team model which personalizes and coordinates care while maintaining patient through-put.

Education
The year 2011 marks the first year of the transition to a five-year urologic residency, one which emphasizes the clinical strengths of the Dartmouth program and allows us to build an educational program based on a core urological syllabus and a variety of clinical and research electives. In the new block, senior residents rotate at the VAMC and Concord Hospital, pediatric experience is solidified at the junior and senior levels, and our chief residents oversee two adult services at DHMC. Three of our last five graduating residents have pursued fellowship training with two pursuing academic careers.

Faculty
Section members remain active in regional and national organized urology. Ann Gormley, MD is the Chair of the Urinary Incontinence Network, an investigative arm of the NIH. She is a senior consultant and examiner of the ABU Examination Committee and the chairperson of the AUA Guidelines Panel on Overactive Bladder. As the Secretary of the New England Section of the AUA, Dr. Gormley coordinates the scientific program for its annual meeting. John Seigne, MD serves on the AUA Superficial Bladder Cancer Guidelines Panel and is the Program Director of the Genitourinary Oncology Group at the Norris Cotton Cancer Center. Vernon Pais, MD has recently been named the Urological...
and Chairman of the Department of Urology at the Mayo Clinic, to the DHMC clinical faculty.

Dr. Pais is taking the lead role in coordinating our various clinical relationships with the Medical School, serving as our clerkship advisor and liaison with the surgical education committee.

Research
The Section of Urology is aligned with the Thayer School of Engineering in the development of new technologies designed to more accurately image malignant changes in the prostate. John Heaney, MD is collaborating with Ryan Halter, PhD on Alex Hartoffís NIH funded grant investigating the use of electrical impedance technology in the accurate diagnosis and staging of prostate cancer. Drs. Seigne and Halter are engaged in an NIH-funded Challenge Grant to develop a prostate biopsy needle capable of receiving electrical impedance images at the time of prostate biopsy. Dr. Pais has completed a number of stone related projects including studies on the use of ultrasonography in the management of ureteral calculi and the role of 24-hour urinary risk factors in stone disease. He recently received external funding to evaluate the role of endogenous urinary thiosulfate in stone formation in pregnancy. Dr. Seigne is developing a care pathway to insure that patients with superficial bladder cancer receive post-resection intravesical chemotherapy. The Section of Urology, in collaboration with our DHMC pediatric colleagues, has seven presentations at this yearís New England Urologic Meeting and four accepted manuscripts by major journals.

Looking Ahead
The Section is exploring clinical affiliations with urologists at local medical centers, working to provide tertiary and support services to colleagues in a rural environment. We look forward to initiating a dedicated menís health clinic focusing on the urological problems of a maturing population.
Our core focus remains the care of patients with vascular disease. Annual outpatient visits continue to increase. As the primary referral center for a geographically large and rural area, we continue to implement various programs to better serve our patients. To do this, we have developed outreach clinics at Cheshire Medical Center in Keene, NH and Central Vermont Medical Center in Montpelier, VT.

Richard J. Powell, MD
Section Chief
Professor of Surgery and Radiology

Alexander J. Horvath
Practice Manager

Patient Care

This endeavor is a component in the development of a multidisciplinary Heart and Vascular Center at Dartmouth-Hitchcock Medical Center. We have placed a focused approach to developing clinical care paths. These care paths have been developed with our colleagues from nursing, cardiology, and vascular surgery, along with The Dartmouth Institute, to develop comprehensive cardiovascular care that is evidence-based and cost effective.

Our open surgical case volume remains steady while our endovascular volume has grown over the last year by six percent. The Branched and Fenestrated Stent Graft Program, for the repair of thoracoabdominal aortic aneurysms, which is lead by Mark Fillinger, MD, is one of only a handful of centers in the United States capable of performing this procedure.

Education

Our Vascular Residency Training Program, led by Program Director Dr. Fillinger, continues to maintain its reputation as one of the best in the nation. The fellowship program continues to attract high quality applicants. Matt Sweet, MD, our 24th vascular fellow, completed his fellowship and has taken an academic surgery position at the University of Washington in Seattle, WA. Replacing Dr. Sweet is Benjamin Brook, MD who completed his general surgery residency at the Johns Hopkins. Our Vascular Surgery Residency Program, the first in the nation, is now in its fifth year. The newest addition to the Program is Kali Walker, MD from the University of South Florida Medical School.

A quarterly CME meeting in the southern region for providers such as vascular nurses, vascular surgeons, and cardiologists interested in the care of patients with vascular disease has been completed. This series covered lower leg ischemia, aneurysmal disease, carotid occlusive disease, and renal and mesenteric disease. In April of 2011, the Section, in conjunction with the Dartmouth CME Office, held a CME accredited course on the care of the vascular patient in Manchester, NH. This program was targeted at primary care providers. The course had over 100 attendees and was well received. Due to this initial success, plans are underway to make this into an annual event.

Section faculty delivered over 45 international, national, and regional education presentations this year of which 30 were for vascular surgical society meetings. Research activity resulted in 25 peer reviewed articles and five book chapters published by faculty this year.

Vascular Surgery conferences are held each Monday morning when faculty and trainees have protected time to attend. These include multidisciplinary biweekly clinical case conferences, a biweekly morbidity and mortality conference, a monthly vascular laboratory conference, clinical and basic science research conference, and journal club.

Research

Ongoing basic science bench research is led by Eva Rzucidlo, MD to study the regulation of smooth muscle cell phenotype. Dr. Rzucidlo has received a Hitchcock Foundation Grant to investigate the role of connective tissue growth factor in the regulation of vascular smooth muscle cell phenotype. She is currently pursuing RO-I Funding with preliminary data based off of this proposal.

Section members remain heavily involved in industry sponsored clinical trials. Dr. Fillinger is the national principal investigator for the Pythagoras endoprosthesis trial for abdominal aortic aneurysms and is the local principal investigator for several endoprosthesis trials for abdominal aortic aneurysms, thoracic aortic aneurysms, aortic dissection, and traumatic aortic injury. Richard Powell, MD is the national principal investigator for stem cell therapy and plasmid gene therapy trials for the treatment of critical limb ischemia. Dr. Powell is the local principal investigator for multiple
carotid stent trials, including the recently completed NIH sponsored CREST Trial. David Stone, MD is the local principal investigator for the Atrium iliac stent graft trial. Philip Goodney, MD served as the local principal investigator for the Hercules trial. Dr. Rzucidlo leads a clinical trial comparing cryoplasty and stenting to stenting alone for treatment of superficial femoral artery lesions.

Outcomes research is led by Brian Nolan, MD and Dr. Goodney who have worked closely with researchers from The Dartmouth Institute for Health Policy and Clinical Practice (TDI). Dr. Nolan has received multiple sources of funding to compare the outcomes of various treatment modalities in patients with critical limb ischemia. Of particular note, Dr. Nolan is in his second year of a K–23 Career Development Award from the National Institutes of Health for research in quality of life of patients with abdominal aortic aneurysms and has applied for a matching grant from the American Vascular Association for this project. Steven Wolsohin, MD, from TDI, will serve as his primary mentor. This is an outstanding accomplishment. Dr. Goodney has received the highest possible score of 1.0 on his recent K-08 proposal to study variations in treatment of critical limb ischemia. Funding for his five-year proposal began October 2010.

Jack Cronenwett, MD continues to lead the Vascular Study Group of New England. This multi-institutional group now has more than 12,000 vascular surgery operations analyzed to provide hospital-specific feedback for improving outcomes. Lastly, Drs. Goodney and Stone together have received the Harms Scholar Award to study outcomes of endovascular repair of thoracic aneurysms compared to open surgical repair using Medicare Care claims data.

**Faculty Highlights**

Dr. Cronenwett is the Editor of the textbook Rutherford’s Vascular Surgery. Robert Zwolak, MD is President of the Society for Vascular Surgery and has been appointed Vice-Chair of AMA/Specialty Society Relative Value Committee Five-Year Review Workgroup. Dr. Zwolak has also been elected Chair of the American College of Surgeons Socioeconomic Issues Committee. Lastly, Dr. Zwolak has been appointed to the Executive Board of the newly established Patient Centered Outcomes Research Institute (PCORI). He is the only surgeon on the Board and this is a tremendous accomplishment. Dr. Fillinger was elected Recorder of the New England Society for Vascular Surgery. Dr. Powell has been elected to serve on the NIH/NHLBI Data Safety Monitoring Board for the CLEVER Trial and has been elected to membership on the Surgery and Bioengineering Study Section of the NIH.

Overall, the members of the Section continue to perform at an outstanding level in their commitment to the care of patients with vascular disease and to the educational and research missions of the Section.
The Surgical Research Laboratory (SRL) is a 10,000 sq. ft. bench research laboratory and experimental animal OR research facility operated under the direction of the Department of Surgery (DOS). The SRL is directed by DOS staff member P. Jack Hoopes, DVM, PhD. The SRL receives administrative input and oversight from the Dartmouth Medical School, Dartmouth College’s Animal Care and Use Program, and the Institutional Animal Care and Use Committee (IACUC). The full-time SRL support staff includes two veterinarians, two veterinary technicians, two research associates, three laboratory/OR managers, and a part-time financial manager. An SRL resident faculty and staff of more than 25 currently support the research of 15 graduate students and post doctoral fellows and more than 30 undergraduates annually.

The basic science component of the SRL includes a complete array of molecular biology instrumentation and techniques including: cell culture, DNA microarray, proteomics array, northern, western, and southern blots, ELISA, TUNNEL assay, RT-PCR, autoradiography, etc. The SRL has dedicated expertise in histologic preparation and staining/labeling techniques including histochemistry, immunohistochemistry, in situ-hybridization as well as fluorescent microscopy, and automated/computer-based microscopic image analysis/quantification.

The experimental animal operating suite routinely studies species ranging from rodents and hamsters to all commonly used large research models including spontaneous canine tumors (pet dogs) treated with curative intent on an NIH/NCI grant protocol in preparation for an upcoming nanotechnology-based breast cancer clinical being directed by NCCC Deputy Director and DOS attending Burton Eisenberg, MD and Professor Jack Hoopes.

SRL surgical and imaging techniques include state-of-the-art animal anesthesia delivery and monitoring, dedicated clinical fluoroscopy/angiography, ultrasound and a laser, and ionizing radiation laboratory. The facility contains five permanent and two mobile operating microscopes, suitable for conventional and microsurgery applications. NCCC Director, Mark Israel, MD, SRL Director, Professor Jack Hoopes, and research colleagues recently acquired an NIH-NCI shared resource grant to construct and further develop a small animal imaging resource at NCCC/DHMC. This shared resource, which is currently under construction, will house rodent dedicated MRI, CT PET, ultrasound, fluoroscopy/angiography and bioluminescence, and fluorescence imaging instrumentation. The same instrumentation is currently available for large animal imaging. Expertise and instrumentation for endoscopy, laparoscopy and radiation therapy/treatment planning are also available. Taken together, research animal-based imaging and surgery technology and instrumentation is at the forefront of the national research effort in this area. The NIH-DHMC supported Advanced Surgical Center (ASC) which was funded in 2010 is now under construction (slated for completion in March, 2013). This facility, one of fifteen in the USA, is a two room OR facility for clinical patients and selected research animal subjects, which included built-in intraoperative MRI, CT, and bi-planar fluoroscopic/angiography technology. The Dartmouth facility is the only one in the USA and Canada to be dual-fitted for animal-based surgical research and clinical patients.

SRL Resident and Non-Resident Faculty
Currently, the SRL provides dedicated research space for 20 Dartmouth Medical School faculty members. Fourteen of the SRL faculty are practicing DHMC clinicians. An additional nine DHMC clinicians have ongoing research projects that utilize the SRL facility. Four SRL faculty have primary or adjunct appointments at the Thayer School of Engineering. Twelve Thayer School of Engineering faculty and nine non-DOS DMS faculty, three Department of Medicine, four Department of Radiology, one Department of Orthopedics, and one Department of OB/GYN, conduct research in the SRL.

Funded research projects include:
• Antibody and non-antibody directed iron oxide nanoparticle breast and ovarian cancer treatment (NIH NCI U54, ACS/ NCCC internal, NIH SBIR awards);
• Development of iron/iron oxide nanoparticles (NIH U54 and foundation award);

P. Jack Hoopes, DVM, PhD
Director
Professor of Surgery and Medicine, Dartmouth Medical School
Adjunct Professor of Biomedical Engineering, Dartmouth College
Thayer School of Engineering, Dartmouth College
• Neonatal cardiorespiratory monitoring and care (industry funding);
• Natural Orifice Transluminal Endoscopic Surgery (NOTES) (CIMIT/NIH award);
• Assessment of novel surgical mesh material (industry and NHIRC awards);
• Noninvasive microwave imaging and heating techniques (ACS/NCCC internal award);
• Electron paramagnetic resonance assessment of O2 levels in radiation tissue damage (NIH P01, U19 award, DOD award, Dow–Crichlow award);
• Radiation innovation and development research (NIH P30 award);
• Retinal implant technology for restoration of retinal blindness (industry award);
• Cornea reshaping technology (Euclid Corp);
• Novel esophageal stent technology (industry award);
• Assessment of novel electrocautery technology (Salient Corp);
• Photodynamic therapy: treatment efficacy and mechanism (NIH R01, P01 and K01 awards);
• Use and development of fluorescence and near infrared (NIR) in cancer imaging, diagnosis, and treatment (three NIH R01 awards);
• Development and assessment of interventional cardiovascular models and technologies (NIH SBIR and industry funding);
• Anti-angiogenesis and associated developmental biology (NIH R01 and foundation awards);
• Electrical impedance spectroscopy and tomography imaging technology (NIH-NCI P01 and R01 Breast cancer imaging awards);
• Protein engineering for diagnosis and therapy of cancer and developmental disease (NIH U54, P20 and NSF);
• Development and assessment of absorbable surgical staples (Artisent Corp);
• Novel treatment of spinal cord injury (AmelioMed Corp and IRS award);
• Use of pre-transplant MRI and novel preservation methods to improve transplant organ health (Somah Corp).

Educational/training activities:
• Microsurgery GME course (plastic surgery);
• Medical student suture training course;
• Introduction to aseptic training technique;
• Advanced trauma surgery and life support (ATLS) training course;
• Animal surgery training (all Dartmouth researchers who perform surgical techniques);
• Head and Neck surgical training (oral, skull-base, throat).

2009-10 Grant and Contract Funding and Publications
The resident SRL faculty was associated with approximately 54 funded research grants in 2010-2011 (35 as Principal Investigator/PI). The majority of these grants were/are supported by peer reviewed funding. In September, 2010, Dartmouth was awarded a five year, $12.8 million dollar grant to establish an NCI Center of Cancer Nanotechnology Excellence (CCNE). Total funding associated with this award is now over $3.5 M annually. Ten CCNE faculty and staff and 8 graduate students, representing more than 50% of the total CCNE award, are associated with the SRL. Resident SRL faculty accounted for 200 published manuscripts (107) and full-length peer reviewed proceeding papers in 2010-11.

Dr. Hoopes has been asked to join the editorial board of the Journal of Nanomedicine: Nanotechnology, Biology, and Medicine as well as the Board of the Society of Thermal Medicine (as Councilor of Medicine).
Introduction
Oral and Maxillofacial Surgery provides a diverse spectrum of care ranging from primary to tertiary levels. Increasing numbers of complex cases involving pathological and structural deformities of the maxillofacial region are referred to DHMC from the tri-state area.

Patient Care
Dr. Addante participates in a number of DHMC interdisciplinary care clinics. He is a key member of the Craniofacial Anomalies Clinic and interacts on the Head and Neck Cancer team and tumor board. He also provides care for patients from the Hematology Oncology Section who typically exhibit coagulation disorders and immune suppression along with their need for oral surgery intervention. Cases involving the care of patients who have undergone radiation therapy as a component of their head and neck cancer care or who develop osteonecrosis as a consequence of bisphosphonate use are also included in the mix of patients with significant co-morbidities.

Education
Rocco Addante, DMD, MD remains active academically as a journal reviewer for articles submitted for publication to the Journal of Oral and Maxillofacial Surgery. In addition, he continues to mentor students from Dartmouth with an interest in careers combining medicine and dentistry and more recently, fourth-year students from Harvard Dental School who rotate through the Red Logan Dental Clinic. Locally, Dr. Addante hosts monthly meetings for our hospital dental staff, and he regularly presents lectures to members of the dental community on topics of mutual interest. He serves on the Anesthesia Review Committee for the state of New Hampshire which credentials oral surgery offices and care providers for the administration of sedation and anesthesia. He also lectures to the Operating Room Technicians Program group at DHMC.

Nationally, he has completed a long tenure on the Commission of Professional Conduct of the American Association of Oral and Maxillofacial Surgeons and as a member of the Examination Committee for the America Board of Oral and Maxillofacial Surgery. Although there is no residency program in Oral and Maxillofacial Surgery at DHMC, Dr. Addante maintains close affiliations with the Sections of Plastic Surgery and Otolaryngology and is an active contributor to the training programs in each of these specialties.

In May of this year, Dr. Addante was again involved with the Maxillofacial Surgery Faculty and Resident Staff at the University of Rome, La Sapienza (Umberto Primo Polyclinic) with lectures on topics of orthognathic surgery, mandibular reconstruction, salivary gland pathology, and issues concerning the treatment of bisphosphonate associated osteonecrosis of the jaws.

Maxillofacial Surgery Gross Professional Revenue

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>$2M</td>
</tr>
<tr>
<td>FY07</td>
<td>$1.5M</td>
</tr>
<tr>
<td>FY08</td>
<td>$1M</td>
</tr>
<tr>
<td>FY09</td>
<td>$0.5M</td>
</tr>
<tr>
<td>FY10</td>
<td></td>
</tr>
<tr>
<td>FY11</td>
<td></td>
</tr>
</tbody>
</table>

Maxillofacial Surgery Cases

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>250</td>
</tr>
<tr>
<td>FY07</td>
<td>200</td>
</tr>
<tr>
<td>FY08</td>
<td>150</td>
</tr>
<tr>
<td>FY09</td>
<td>100</td>
</tr>
<tr>
<td>FY10</td>
<td>50</td>
</tr>
<tr>
<td>FY11</td>
<td></td>
</tr>
</tbody>
</table>
MEDICAL STUDENT EDUCATION

The Liaison Committee on Medical Education (LCME) will be here next year so we are in our documentation year. This re-accreditation process is extremely important to the Dartmouth Medical School (DMS) and our mission as educators. Behind this LCME effort is also a new Dean of the DMS and new goals for medical education. It is likely the traditional 2x2 model of classroom and clinical experience will give way to a more integrated concept of clinical experiences mixed in with classroom, a Master’s program, and a more formal exploratory clinical experience before applying for residencies. Time constraints on the residents challenge their efforts to be educators and integrated into the medical school curriculum. All members of the faculty are feeling the tension between RVU productivity and the non-reimbursable time that quality education needs. Our challenge is to mesh resident education with students who have clinical skills and have mentoring faculty.

The good news regarding our current milieu is that we; faculty, residents, and students, are more clearly collaborating in the responsibility of being concurrently a teacher, learner, and facilitator. It is a more dynamic and less hierarchical learning environment. The Surgery Clerkship’s educational focus remains on surgical concepts, surgical decisions, and acute care delivery.

The multi-media sophistication of our students has allowed us to use a variety of educational formats, and this redundancy allows students to individually choose their own way to acquire factual knowledge. In the shortened curriculum, all students do well by one measure of knowledge, the NBME shelf exam. Our oral exam now includes a student-prepared presentation to judge a student’s insight into the patient he or she has cared for.

The Class of 2011 graduated with 24% of the students entering a surgical field.

The 2011 Arthur Naitove Surgical Scholar, awarded by the Department of Surgery and based on: an honors evaluation on the wards, a 95 percentile or greater NBME exam, and evidence of participation in efforts to “better the greater good,” is Claudia Berrondo, who is taking her training at the University of Rochester, and plans a urologic career.

Sonny Chatterjee, MD, who moved into Plastic Surgery after three years in general surgery, received the Thomas P. Almy Housestaff Teaching Award. The Almy honor is awarded to a resident by the graduating DMS class.

Clerkship Advisory Board
The Clerkship Advisory Board meets monthly and works to advance the educational climate. The committee conducts ongoing reviews of the curriculum, examination process, and student progress. Our new Chair, Richard Freeman, MD, is an active, eager participant, and continues the active chair advocacy of quality education. The group makes revisions to maintain a current curriculum. It is the forum by which the Department of Surgery formally interacts with the Dean’s office and our affiliated hospitals in student and curriculum issues.
Our new section chief is Shane Chapman, MD. Kathryn Zug, MD has been program director since November, 2010. Both are graduates of our program. We have two new faculty: Faramarz Samie, MD, who is director of Mohs surgery and procedural dermatology, and Dorothea Torti, MD, a 2011 graduate of our program, joined the faculty and will enter a dermatopathology fellowship in July 2012 at our institution.

The Dermatology Residency Program trains six advanced dermatology residents, two residents at each of the three levels of residency training. Our three-year curriculum emphasizes graduated clinical autonomy while maintaining a strong focus on academic study. A joint fellowship in Dermatopathology (with the Department of Pathology) graduated a fellow last year.

Our residents receive their training through the Mary Hitchcock Memorial Hospital and the Veterans Affairs Medical Center in White River Junction, VT. Residents benefit from a rich array of dermatological cases, from the general dermatology clinic, busy and challenging consult service, and specialty clinics at DHMC and the VA.

The Dermatology Residency Program draws on the strengths of a committed section faculty and a growing array of resources. The dermatology residents rotate and actively participate in the Section's subspecialty clinics, including:

- Contact and Occupational Dermatology Clinic
- Cutaneous Lymphoma Clinic (interdisciplinary with hematology/oncology)
- Dermatology–Rheumatology Clinic (interdisciplinary with rheumatology)
- Pediatric Dermatology Clinic
- Mohs and General Dermatologic Surgery Clinic
- Laser and Cosmetic Dermatology Clinic
- Vulvar Dermatology Clinic (interdisciplinary with GYN)

Residents quickly flourish in their clinical decision making skills because of their continuity clinic experience that begins in the first year and continues throughout their three program years. Residents benefit from graduated responsibility and increased complexity of patients over the years.

All residents are well aware of the six ACGME competencies: 1) patient care, 2) medical knowledge, 3) practice-based learning and improvement, 4) systems-based practice, 5) interpersonal and communications skills, and 6) professionalism. Curriculum is based on these competencies, and residents are taught and evaluated with respect to these core competencies.

The educational conference schedule within the Dermatology Training Program remains robust. Conferences include a noon conference on most days of the week (clinical slides, didactic lectures, journal club, and dermatopathology practical sessions at the microscope) and Melanoma Tumor Board. Dermatology Grand Rounds occurs twice a month. New for academic year 2011 is a monthly interdisciplinary Cutaneous Lymphoma Tumor Board.

The Dermatology Training Program hosts visiting professors who present lectures in their areas of interest. The visiting professor participates in Grand Rounds, and interacts with residents and faculty.

We are an academic program and continue to encourage and support resident research and teaching. Our residents have continuously produced numerous abstract presentations at national and regional meetings and several peer-reviewed publications.

In the last ten years, our program has produced eight (out of 24 graduates) academic dermatologists who remain in academia, and an additional five residents (out of 22) who have successfully pursued a specialty fellowship within dermatology. Hence, over 50% of our recent graduates have gone on to a career in academic dermatology or fellowship training.
NEUROSURGERY RESIDENCY TRAINING PROGRAM

David W. Roberts, MD
Neurosurgery Residency Program Director
Professor of Surgery and Section Chief, Neurosurgery
Alma Hass Milham Distinguished Chair in Clinical Medicine, DMS

Melissa D. Robb
Administrative Supervisor & Residency Program Coordinator

NEUROSURGERY

Residency
Established: 1947
Prerequisite Training: 4 years of medical school
Program Description: 7-year program, includes rotations in Neurology, Critical Care, Neuroradiology and Neuropathology, one year of independent research/training, and five years of clinical neurosurgery, culminating in a one year Chief Resident experience.
Residents per year: 1

The Neurosurgical Residency Program has been an approved training program since its inception in 1947 by Henry Heyl, MD, later the editor of the Journal of Neurosurgery. With a mission to provide the highest level of academic and clinical teaching, the Program has proudly graduated neurosurgeons who have been successful across a wide range of endeavors. Over the past twenty-five years, more than half have gone on to academic positions.

The residency program in Neurosurgery trains seven residents, one at each level of training. The six-plus-one year curriculum begins with an integrated PGY-1 year, which includes general surgery, neurology, critical care, and neurosurgery rotations. The PGY 2-5 rotations in clinical neurosurgery are interspersed with dedicated blocks in pediatric neurosurgery as well as related neuroscience disciplines, including neuroradiology and neuropathology. The PGY-6 year provides a twelve-month experience in the laboratory or on independent study, variably involving wet-bench research, clinical investigation, supplementary clinical subspecialization, or study in a master’s degree program. Clinical instruction follows graduated progression through increasing levels of intellectual growth, technical proficiency, and clinical responsibility culminating in twelve months as chief resident. By the final year of training, the resident has acquired a broad education, is capable of teaching medical students and junior residents, and is able to operate across the full range of neurosurgical disorders.

The clinical neurosurgical service is founded on a model of subspecialization within Neurosurgery, functioning in multidisciplinary programs of the Medical Center. Residents are fully integrated into the clinical service, each teamed with a faculty member. Residents participate fully in the operating room beginning in their first year and are given progressive responsibility through their succeeding years. All subspecialties of Neurosurgery are represented in the Program by faculty with special training, clinical expertise, and investigative interest.

The teaching conference schedule is rigorous and protected. Conferences include Neurosurgery Journal Club, Grand Rounds, Clinical Case Conference, Morbidity and Mortality, Neuro-Oncology Tumor Board, Neuropathology, Cerebrovascular Conference, Epilepsy Conference, Pediatric Trauma and Tumor Board Conferences, and a weekly case presentation conference with the Program Director.

An active visiting professor program brings four-to-six distinguished academicians each year. In the tradition of Dartmouth’s international reach, neurosurgery residents have joined our faculty in recent medical education initiatives to Vietnam and Uruguay. Residents have an opportunity to participate in national courses and workshops, including those organized by the AANS, the CNS, and the AFIP. Each resident, during their training, attends the Woods Hole RUNN course. Residents actively present and publish their research and clinical investigative work. During 2010-2011, the program was responsible for 57 publications. Recent residents have won the Shulman Award for the best resident paper at the AANS/CNS Pediatric Section meeting, the Gildenberg Award for the best resident paper at the AANS/CNS Stereotactic and Functional Section meeting, the CNS Walter Dandy Research Fellowship, a CNS Travel Award, multiple NIH awards, and the Retzius Neuroanatomy competition.

State-of-the-art facilities at Dartmouth-Hitchcock Medical Center, the major teaching hospital of a health care delivery system covering northern New England, include dedicated neurosurgery and neuropathology laboratories, the Simulation Center, the Advanced Imaging Center, and (under construction) the Advanced Surgical Center, comprised of two operating rooms with intraoperative MRI, CT, and angiographic capability. The Dartmouth Institute for Health Policy and Clinical Practice, the Norris Cotton Cancer Center, and the Biomedical Engineering Program at Dartmouth’s Thayer School of Engineering provide educational and investigational opportunities for residents in our program.
Samuel R. G. Finlayson, MD  
(January – September, 2011)  
General Surgery Residency  
Program Director  
Vice Chair for Academic Affairs and  
Faculty Development, Department  
of Surgery  
Associate Professor of Surgery,  
Community & Family Medicine,  
and The Dartmouth Institute

Paul H. Kispert, MD  
(September, 2011 – Current)  
General Surgery Residency Program  
Director  
Assistant Professor of Surgery and  
Anesthesiology

Kari M. Rosenkranz, MD  
(September, 2011 – Current)  
General Surgery Resident  
Program Director  
Assistant Professor of Surgery

Kari M. Rosenkranz, MD  
(September, 2011 – Current)  
General Surgery Associate  
Residency Program Director  
Assistant Professor of Surgery

Karen G. Lee  
Residency Program Coordinator

### Concord General Surgery Residency Program Directors

**Joseph P. Meyer, MD**  
Adjunct Associate Professor of Surgery

**Richard K. Murphy, MD**  
Adjunct Assistant Professor of Surgery

**Sharon I. Gunsher, MD**  
Adjunct Assistant Professor of Surgery

**Nick P. Perencevich, MD**  
Adjunct Associate Professor of Surgery

**Joseph R. Snow, MD**  
Adjunct Assistant Professor of Surgery

**Russell A. Strong, MD**  
Adjunct Assistant Professor of Surgery

**Christian P. Wilke, MD**  
Adjunct Assistant Professor of Surgery

### GENERAL SURGERY

**Residency**

Established: 1946  
Prerequisite Training: 4 years of medical school  
Program Description: 5-year program, training in all division.  
Residents per year: 4

**Fellowship**

Minimally Invasive Surgery Fellowship: 1

The residency program in General Surgery trains twenty categorical general surgery residents, including four residents at each of the five levels of residency training. In addition, fourteen more surgical residents participate in the General Surgery Program preliminary to entering other training programs.

Residents benefit from the rich array of surgical cases. As Mary Hitchcock Memorial Hospital continues to grow, surgical cases have not only continued to increase in number, but also in complexity as measured by case mix index and severity of injury for trauma patients.

The Program draws on the strengths of a committed departmental faculty and a growing array of resources. Gina Adrales, MD serves as Director of Surgical Simulation in Dartmouth’s Patient Safety Training Center. Dr. Adrales’s responsibilities include oversight and coordination of the laparoscopic and trauma simulations as well as training in basic surgical skills. Ted Trus, MD oversees the Surgical Endoscopy Training Program in the third post-graduate year. In addition, the Program includes a weekly “academic half-day.” This half day of didactics also incorporates a basic
science curriculum directed by Ken Burchard, MD and a broad-based simulation training curriculum directed by Dr. Adrales. These sessions provide the surgical residents didactic, interactive, case-based learning in clinical and basic surgical sciences. This is based on the American College of Surgeons SCORE Curriculum and is divided into junior and senior sections.

The Program is supported by a growing array of data centers that collect and analyze information about procedures and outcomes for surgical patients admitted to DHMC. These include registries administered by the Surgical Outcomes Assessment Program at Dartmouth, the Northern New England Cardiovascular Disease Study Group, and the Vascular Study Group of Northern New England. Specific complications are identified, collated, and sorted into defined categories. Data from these centers are made available in a confidential manner to house officers and faculty, and can be used to inform the discussion at the weekly Morbidity & Mortality conference. In 2011, the Department began participating in the American College of Surgeons National Surgical Quality Improvement Program (NSQIP). Expertise in epidemiology and statistical analysis is available by dedicated faculty in the Department of Surgery. Data from the Trauma Program is submitted to the National Trauma Data Bank (NTDB), and national data is available for review.

The Program continues to provide a popular rotation at Concord Hospital for second- and third-year surgical residents. This rotation allows us to take further advantage of the robust clinical volumes and increasing case complexity occurring in southern New Hampshire.

The teaching conference schedule within the Program remains robust. Conferences are available on a weekly basis on various services. These include GI Tumor Board, Trauma Rounds, Surgical Seminars, Surgical Grand Rounds, Morbidity & Mortality conference, an interdisciplinary Gastrointestinal Disease Conference, a monthly Journal Club as well as service-specific conferences. The Program hosted twelve visiting professors who presented Grand Rounds and interacted with residents and faculty.

The Program is an academic program and continues to encourage and support resident research and teaching. Over the last few years, residents in the Program have produced numerous scientific presentations at national and regional meetings, several peer-reviewed publications, and even garnered mention in regional and national media. Resident teaching has also maintained its outstanding tradition.
The Residency Program in Otolaryngology-Head and Neck Surgery at Dartmouth-Hitchcock Medical Center (DHMC) is designed to provide residents with education in the comprehensive medical and surgical care of patients with diseases and disorders that affect the ears, the upper respiratory and upper alimentary systems and related structures, and the head and neck.

The Program includes the core knowledge, skills, and understanding of the basic medical sciences relevant to the head and neck; the upper respiratory and upper alimentary systems; the communication sciences, including the knowledge of audiology and speech pathology and audiologic and speech rehabilitation; and the chemical senses and allergy, endocrinology, and neurology as they relate to the head and neck area. The Program also includes the clinical aspects of diagnosis and the medical and/or surgical therapy for prevention of diseases, neoplasms, deformities, disorders and/or injuries of the ears, the upper respiratory and upper alimentary systems, the face, the jaws, and other head and neck systems; head and neck oncology; and facial plastic and reconstructive surgery.

Following completion of the Program, residents should be prepared to care for patients of all ages with medical and surgical disorders of the ears, the upper respiratory and upper alimentary systems and related structures, and the head and neck; to carry out diagnostic evaluations of patients with otolaryngologic disorders; and to carry out the surgical and nonsurgical management of otolaryngologic disorders, including rehabilitation and referral to subspecialists when appropriate. As a vital adjunct to the acquisition of the required medical knowledge and patient care skills, the resident will acquire the skills needed to practice medicine in a complex medical system. The interpersonal and communication skills needed for such a practice as well as expertise in systems-based practice are continually emphasized and evaluated throughout the residency. Proper professional behavior is fostered as the resident masters the essential skills of practice-based learning that will prepare him or her for a lifetime of learning.

The ACGME granted approval for Otolaryngology to start a new residency program in July of 2008. The Program is now fully populated with five residents, one in each year of training. We will graduate our first chief resident, Tate Maddox, MD, in June 2012. A Residency Review Committee site visit last year granted us full approval with a 4-year cycle length.

Our residents are quite active in medical student and intern education. They participate and present papers at the New England Otolaryngological Society meetings three times per year and have each presented papers and posters at national meetings.
The residency program in Plastic Surgery trains three residents, one per academic year in a three-year program. MHMH provides a comprehensive and broad-based training experience through exposure to the outpatient clinics, minor surgery suite, main operating room, outpatient surgery center, and inpatient wards. Most of our faculty members have fellowship training and subspecialty areas of clinical and research interest, permitting an exposure to a wide spectrum of plastic surgery problems. We assign residents two half-day supervised clinics per week, providing them with a regular opportunity for both new patient workups and follow-up evaluations. During the final year of the program, the chief resident is given increasing responsibility for coordinating and customizing the educational and clinical aspects of the program. Residents at every level are involved in the management of all plastic surgical problems presenting through the Emergency Department. Research electives, throughout the residency, provide meaningful learning opportunities. During the chief resident year, the resident may also train overseas.

There are twice-weekly conferences for resident education. In both settings, there is active participation by the resident and attending staff. These conferences address the weekly case log, a journal review, and lecture series which are based on the core curriculum established by the American Board of Plastic Surgery.

The program supplements the experience at MHMH with a dedicated burn rotation at LAC/USC Hospital in a burn unit within the plastic surgery division. Additionally, exposure to private practice setting is achieved with rotations at a well-established group in Maine and a nationally recognized cosmetic surgeon in Miami. Every year our residents present at both national and regional society meetings. The graduates of the program have been successful in pursuing fellowship positions with Oscar Ho, MD going to Stanford for a microsurgery fellowship, and Christopher Jensen, MD going to NYU for a hand surgery fellowship.
The Dartmouth-Hitchcock Urology Residency Program was started in 1949 by William McLaughlin, MD as a two-year urology residency with one resident accepted per year. In 1987, we became a four-year program and in 2006, we were given approval to complete our expansion to two residents per year. Historically, our residents have completed two years of general surgery training prior to entering the urology residency. Starting in July 2012, our residents will only do one year of general surgery training, which will align us with most of the other urology programs in the Country.

The Dartmouth-Hitchcock Urology Residency Program is dedicated to the overall mission of the Dartmouth-Hitchcock Medical Center (DHMC) and strives to improve, through research and education, our understanding of the causes, courses, management, and prevention of urologic diseases.

Eight full-time faculty members provide a complete range of subspecialty urologic training. Clinical urology training at Dartmouth is oriented around the philosophy of resident exposure to continuity of patient care. Residents are assigned on an “apprenticeship basis” to a team of two or three urology attendings. The Section emphasizes one-on-one interaction between the faculty and the resident fostering an apprenticeship style allowing a resident to progress at his or her own pace, although there are expectations for what the resident should accomplish within each year. As we have expanded our resident numbers, we have also adapted certain aspects of a hierarchical model where the Chief Resident runs the in-patient service and is ultimately responsible for assignment of operative cases.

The Urology Training Program also involves the Veterans Affairs Medical Center (VA) in White River Junction, VT and Concord Urology in Concord, NH. While at the VA, the resident is responsible for the total patient care in the out-patient clinic, emergency room, and the in-patient ward service. The resident operates on virtually all urologic cases with appropriate faculty supervision. The Concord rotation was designed to give our residents exposure to a system that is more of a private practice model. While rotating at Concord, the resident, under supervision, is potentially responsible for total patient care of all urological in-patients. The resident operates three- or four-days per week and, therefore, completes the rotation having improved his or her surgical logs and clinical experience.

The Urology Training Program has a robust conference schedule which affords residents protected educational time. Research meetings, urogynecology/female urology case conferences, and faculty led case conferences round out the teaching program. During the summer months, ethics conferences are held in place of Urology Grand Rounds.

Resident research is expected throughout the Urology Residency Program. Our residents routinely present at regional and national meetings. Residents also have an opportunity to attend nationally organized courses and workshops.

At the completion of our residency program, our residents are well prepared for academic or private practice. Our residents are able to compete for competitive fellowships in all urologic subspecialties; whereas, other residents have their pick of private practice opportunities. We have maintained a very high pass rate for Part I and Part II of the American Board of Urology Exams.
The residency program in Vascular Surgery continues to maintain its reputation as one of the best in the nation. The overall Vascular Surgery Residency Training Program continues to have two options for training pathways, with both the traditional fellowship and the newer residency program.

The traditional vascular fellowship is a course for residents in the “5+2” pathway, who have completed a five-year general surgery training program. The fellowship continues to attract great applicants from around the country.

Our five-year integrated Vascular Surgery Residency Program is open for applicants who will join after successful completion of an MD program, also known as the “0+5” training pathway. The Dartmouth integrated program was the first approved in the nation, and is now in its sixth year. Our program had its first site visit in 2009 and achieved full five-year reaccreditation by the ACGME. Our most recent resident joining the Program is Karen “Kalei” Walker MD, PGY1, who comes to DHMC from the University of Florida. Randall De Martino, MD is the first resident to begin the Program, and is now in his fourth clinical year, having completed his research year in the TDI Master’s program. He was elected as the resident representative to the Executive Council of the Association of Program Directors in Vascular Surgery.

Both the residency and fellowship programs have robust training with regards to case volume, variety, and complexity, with the complexity ranking among the 90th percentile nationwide. The full spectrum of research opportunities exist, including basic science, engineering, and outcomes-related research, many of which include NIH funding. A large number of databases are available in this regard, ranging from the Section’s own database to the regional Vascular Study Group of New England database (founded here by Jack Cronenwett, MD), to a regional and national aortic aneurysm imaging database via M2S, as well as national NIS and Medicare databases. The vascular section continues to be active in nationwide clinical trials, with over thirty such trials currently in various stages. These trials provide patients and trainees access to the latest technology, ranging from devices for endovascular repair of thoracic aortic aneurysms, dissections, and traumatic injury, to branched-fenestrated aneurysm repair of abdominal aortic aneurysms and iliac aneurysms, carotid artery stenting for stroke prevention, lower extremity and renal artery stenting, and even gene therapy for lower extremity limb salvage.

Training opportunities include dedicated Vascular Surgery conferences held each Monday morning, when faculty and trainees all have protected time to attend. These include multidisciplinary clinical case conferences, morbidity and mortality conference, monthly vascular laboratory conference, clinical and basic science research conferences, and journal clubs. Vascular laboratory training includes dedicated, supervised case review to complete the requirements for credentialing as an MD reviewer. The residency has weekly joint conferences with the General Surgery Residency Training Program as well as patient simulation experiences built into the training program.

The Vascular Programs at MHMH have been successful academically in many regards. Residents and fellows have produced numerous scientific presentations at regional, national, and international meetings, numerous peer-reviewed publications, and awards at our national meeting in multiple years. The Program has been quite successful in training academic vascular surgeons, with the large majority of our trainees joining the faculty at academic teaching institutions.
2011 AWARDS

The Surgical Chair’s Award
Donald Miller, MD
Assistant Professor of Surgery, Ophthalmology

Each year, the Chair of the Department has the opportunity to acknowledge the contribution of an individual, or several individuals, through the Chair’s Award. The Award is intended to recognize an individual’s accomplishments which have especially reflected the ideals or goals for the Department. The 2010 Surgical Chair’s Award recipient is Paul H. Kispert, MD.

The Arthur Naitove Distinguished Teaching Award
Kerrington Smith, MD
Assistant Professor of Surgery, General Surgery

The Arthur Naitove Distinguished Teaching Award was instituted by the residents in 1997 to recognize a faculty member’s commitment to the housestaff. The Award is presented to an attending staff for their commitment to enhance the residency educational experience. The 2010 recipient of the Arthur Naitove Distinguished Teaching Award is Robert M. Zwolak, MD, PhD.

The Harmes Surgical Scholar Award
Christopher Simpkins, MD
Assistant Professor of Surgery, Transplantation Surgery

The Harmes Surgical Scholar Award is awarded annually to a faculty member(s) at the Assistant or Associate Professor level in the Department of Surgery. The annual financial award is provided over three years to facilitate career development by strengthening individual professional skills; enhancing contributions to the academic, clinical, and administrative programs of the Department; improving the regional and national visibility of DHMC; and increasing each individual’s sense of professional competence and satisfaction. The Harmes Scholar Award for 2010 was awarded to Kerrington Smith, MD, PhD.
2011 AWARDS

The Richard W. Dow Career Development Award in Surgery and The Robert W. Crichlow Career Development Award in Surgery

The purpose of these two research awards is to provide protected time for up to 2 early career Department of Surgery (DOS) faculty members to develop research programs that will lead to independently funded careers in clinical, translational, or basic Surgical Sciences. These awards are patterned after NIH Mentored Research Scientist Development Awards (K01). The ultimate goal of these awards is to stimulate career development in surgical research.

The Richard W. Dow Award
Eva Rzucidlo, MD
Associate Professor of Surgery, Vascular Surgery

The Robert W. Crichlow Award
Eunice Chen, MD
Assistant Professor of Surgery, Otolaryngology

Department of Surgery Care Path Award
Section of Otolaryngology

Awarded to the Section of Otolaryngology for their Head and Neck Surgical Oncology Care Pathway: A Patient-Centered, Value Stream, Integrated Care Path for Head and Neck Cancer Surgery at Dartmouth-Hitchcock Medical Center.
Dartmouth-Hitchcock Medical Center has continued to be an active participant in living donor exchange programs. We have benefited from several Good Samaritan donors who have offered their kidney to any patient that needs it. Working with the United Network for Organ Sharing (UNOS), these courageous individuals have initiated donor chains leading to four to five transplants across multiple states. We also performed the very first donor exchange in a new national exchange program in cooperation with Washington University in St. Louis, MO.

“Paired donation is helping the transplant community help people who otherwise could not get a living donor transplant. We’re proud to be able to coordinate these for the first time using a national network for potential matches among 77 participating transplant programs,” said OPTN/UNOS President Charles Alexander, RN, MSN, MBA. United Network for Organ Sharing (UNOS) operates the Organ Procurement and Transplant Network (OPTN) under federal contract.

Cathy Richard of Henniker, NH, had planned to donate to her sister-in-law, Ms. Niedzwiecki, and Rebecca Burkes of St. Louis, MO, had intended to be a living donor for her fiancé, Mr. Crowder – only to find that both were medically incompatible with their intended recipient. But in the first paired donation arranged through a national pilot program of the OPTN, Ms. Burkes was able to donate to Ms. Niedzwiecki and Ms. Richard became a donor for Mr. Crowder.

The donor recovery and transplant operations all took place Monday, December 6, 2011. Ms. Niedzwiecki was transplanted at Dartmouth-Hitchcock Medical Center, and Mr. Crowder received a transplant at Barnes-Jewish Medical Center in St. Louis. Ms. Richard underwent surgery at Dartmouth-Hitchcock, and Ms. Burkes donated her kidney at Barnes-Jewish. The kidneys were preserved for transportation by the New England Organ Bank and Mid-America Transplant Services; Angel Flight, Inc. also provided air transportation to and from Dartmouth-Hitchcock.

Drs. Surendra Shenoy and Jason Wellen performed the donor and recipient surgeries at Barnes-Jewish. “Paired kidney exchange programs have allowed for a significant increase in the number of patients that receive a living kidney transplant, therefore freeing up additional cadaveric kidneys for the 80,000 plus people on the national wait list,” said Dr. Wellen, Surgical Director of the Washington University/Barnes-Jewish kidney and kidney/pancreas transplant program. “A nationally run paired exchange program will allow for many new donor/recipient matches to take place that would otherwise not have been available through smaller-run paired exchange programs.”

The donors and recipients were paired according to the first computerized match run conducted by the OPTN in October 2010. Each transplant program participating in the pilot program submits detailed medical information on potential living donors and candidates to an affiliated coordinating center, which works directly with UNOS on administrative issues such as enrolling donor/recipient pairs, making logistical arrangements and entering data. The New England Program for Kidney Exchange (NEPKE) was the coordinating center for Ms. Richard and Ms. Niedzwiecki; Johns Hopkins Hospital served as the coordinating center for Mr. Crowder and Ms. Burkes.

“We are extraordinarily grateful for the work of the coordinating centers, each of which also arranges kidney paired donations within its own network of transplant programs,” said Mr. Alexander of the OPTN and UNOS. “The goal of the pilot project is to see whether combining the data of multiple centers and networks will generate successful matches that may not be found through one individual organization. The fact that these transplants occurred from the first match run suggests this will be true.”

Future match runs will be conducted every four to five weeks with information on potential living donors and candidates supplied by pilot participants. Each transplant program will make individual medical decisions about accepting living donors or candidates and whether they qualify for matching through the pilot program. In addition, each program must document that potential living donors have undergone a rigorous medical screening and have provided detailed informed consent for donation and for potential participation in a national match run.
The Inaugural Department of Surgery Care Path Award

In a ceremony attended by members of the Department of Surgery and James Weinstein, MD, CEO, the Department of Surgery’s Otolaryngology Section was presented with a $25,000 check as the winners of the inaugural Department of Surgery Care Path Award for their Head and Neck Surgical Oncology Care Pathway: A Patient-Centered, Value Stream, Integrated Care Path for Head and Neck Cancer Surgery at Dartmouth-Hitchcock Medical Center.

A year ago, Department of Surgery Chair, Richard Freeman, MD, challenged the Sections to develop and submit evidenced-based “care paths” for improvement of patient care. “We really need to map out what our processes are, bring in all the pieces who are involved, which are not just surgeons, and think about how we’re going to standardize our care,” said Dr. Freeman. According to Care Path Administrator, Darrin Michalak, PA-C, a “care path” defines the steps of care delivered to a patient as they progress through a treatment using the best evidence available to support the steps taken. Each step is backed up by evidence, either from topic-specific literature, or by expert clinician agreement. For any particular diagnosis or procedure, the care path process outlines the ideal method of care, and the order and timing in which care should be given. “Throughout the process decisions are made through collaboration with clinicians, nurses, case managers, and other health care professionals,” noted Mr. Michalak. An important part of the process is that it takes into account the patient’s wishes and makes sure that high-quality care is delivered consistently each time for every patient. “By making sure that care is consistent, cost can also be minimized, both to the patient and to the hospital,” he said.

In all, six sections care paths were developed from Oral and Maxillofacial Surgery, General Surgery - Breast Program, General Surgery - Bariatric Program, Vascular Surgery, the Acoustic Neuroma Clinic, and Otolaryngology. “I think this is exceptionally important work,” said Dr. Weinstein, “and there are no losers because everything that was developed here will be implemented in the organization.” At the ceremony, representatives of the Otolaryngology Care Path Award team included, Annette Tietz, Benoit Gosselin, MD, Sheila Keating, RN, and Daniel Morrison, MD.

To judge the submissions Dr. Freeman asked Gene Nelson, PhD, Director of Population Health Measurement for The Dartmouth Institute for Health Policy & Clinical Practice (TDI), to form a panel of experts in process improvement. Dr. Nelson explained that the care paths were evaluated on five criteria areas including: the evidence-based guidelines; policies and/or evidence reviews; the number of patients that would benefit; the potential for better health outcomes; the ability to implement; and whether it could lower cost of care. Dr. Freeman wanted the panel’s input on which submission best met the established criteria. It was very difficult to choose a winner. However, as Dr. Nelson explained, “What distinguished the recipient was the high degree of patient-centered design, education, and support of the patient as part of the process.” Dr. Morrison and his team developed Otolaryngology’s care path with the aim to “enhance the quality of care delivered to our head and neck cancer patients, improve the efficiency of their journey through the medical care system, and reduce cost over a continuum of care.”

“Our care path has about five different elements that ran the gambit from informed choice to actual care decisions to arranging for follow-up,” Morrison explained and “we want to make sure that everything is automatized. If we systematize everything, it takes a lot of variation out, and we’re able to focus on the care instead of making sure that we didn’t miss something.”

Morrison plans to invest the money in a way that will assure that the Head and Neck Cancer Care Path and other quality improvement initiatives within their Section continue to develop and improve. Working with the Clinical Microsystems group at TDI, he hopes to identify a paid consultant to work with them part-time to oversee the project and to help write a grant to secure future funding.

This will be an annual award in the Department of Surgery with the addition next year of a data integration and measurement criteria. “Now that we have eD-H, next year we’re going to think about how we measure these standardized pathways and, hopefully, improve the quality and the cost,” Dr. Freeman said.
The evolution of aortic valve replacement at Dartmouth-Hitchcock Medical Center (DHMC) is on the precipice of the next major advancement in structural cardiac technologies. During 2011, DHMC was accepted into the second iteration of the largest trial of Transcutaneous Aortic Valve Replacement (TAVR). The participation in this trial places DHMC among a unique group of institutions that will have access to this therapy. Moreover, the trial will allow DHMC to treat the broadest population of patients with severe aortic stenosis in northern New England.

The treatment of aortic stenosis has been refined over decades, including here at DHMC. Traditional valve replacement has resulted in outcomes that are consistently superior to national benchmarks. The upper limits of age with aortic valve replacement have been investigated and our publications, through the Northern New England Cardiovascular Disease Study Group (NNE), document the optimistic results. However, there remain patients with severe symptomatic aortic stenosis that cannot be treated with conventional techniques.

There is data that suggests there is an under-treatment of patients with severe aortic stenosis. Some of these patients are individuals that are too ill to undergo aortic valve replacement for any reason. In addition, the extremely high risk patients will now have a potential alternative to traditional aortic valve replacement. TAVR will be offered to both types of patients as 2012 moves forward. The approach to these patients will involve collaboration with cardiology, vascular surgery, and anesthesiology. Each patient will undergo a rigorous screening process and then, depending on their anatomy, will be offered a valve that could either be placed using catheters that enter the groin or through a minor incision on the side of their chest.

With the addition of TAVR to the many therapies that we offer patients with cardiac and vascular disease, the Heart and Vascular Center at Dartmouth-Hitchcock continues to expand its footprint. It will continue to become increasingly important that the ties among all subspecialties that focus on the body’s circulation will work together with primary providers to improve the lives of our population.
CLINICAL TRIALS AND RESEARCH

David A. Axelrod
- Geographic Disparity

Perry Ball
- Coregistered Fluorescence-Enhanced Resection of Brain Tumor

Richard J. Barth, Jr.
- A study to evaluate the use of supine MRI images in breast conserving surgery
- A prospective study of partial breast adjuvant radiation therapy after resection of borderline and malignant phyllodes tumors
- A randomized phase II study of the effect of a low calorie diet on patients undergoing liver resection
- Ultrasound evaluation of sentinel lymph nodes in melanoma patients
- A phase III multicenter randomized trial of sentinel lymphadenectomy and complete node dissection vs. sentinel lymphadenectomy alone in melanoma patients
- A study of the prognostic importance of local T cell immune reactivity in colorectal cancer metastases
- Increased rates of long term complications after mammosite brachytherapy compared to whole breast radiation therapy
- Z10 and Z11
- Delayed Complications of Mammosite Partial Breast Irradiation

Kimon Bekelis
- Cerebral aneurysm inflammation: prospective correlation of the preoperative use of 18F-FDG PET/CT and ultra-small superparamagnetic iron oxide particles (USPIOs) assisted MRI with postoperative histologic results in human subjects

Kenneth Burchard
- Secondary Over-triage in a Rural Trauma System
- Salivary Cortisol in Critical Illness
- Hematoma in Blunt Abdominal Trauma
- Overtriage of Interfacility Transfer for Trauma

M. Shane Chapman
- A 10-year, Post-marketing, Observational, Registry to Assess Long Term Safety of HUMIRA (Adalimumab) in Adult Patients with Plaque Psoriasis
- A Novel Dermatology Triage Tool
- Raptiva® Epidemiologic Study of Psoriasis Outcomes and Safety Events (RESPONSE) in Patients with Chronic Moderate to Severe Plaque Psoriasis
- Observational Post-Marketing Safety Surveillance Registry of Enbrel® (etanercept) for the Treatment of Psoriasis (OBSERVE-5™)

A Multicenter, Open-label Study to Assess the Efficacy and Safety of Infliximab (REMICADE®) Therapy in Patients With Plaque Psoriasis Who Had an Inadequate Response to Etanercept (ENBREL®)
- Efficacy and Safety of Alitretinoin in the Treatment of Severe Chronic Hand Eczema Refractory to Topical Therapy
- A Dose-Ranging and Efficacy Study of LY2439821 (an Anti-IL-17 Antibody) in Patients with Moderate-to-Severe Psoriasis
- A Multicenter, Open Registry of Patients with Plaque Psoriasis Who Are Candidates for Systemic Therapy Including Biologics
- A Randomized, Placebo-Controlled, Double-Blind, Parallel Group, Multi-Center Phase IIb Dose Finding Study of M518101 in Plaque Psoriasis Patients
- A Phase 3, Multi-Site, Randomized, Double-Blind, Placebo-Controlled, Parallel Group Study Of The Efficacy And Safety Of 2 Oral Doses Of CP-690,550 In Subjects With Moderate To Severe Chronic Plaque Psoriasis
- A Phase 3, Multi-Site, Open-Label Study Of The Long Term Safety And Tolerability Of 2 Oral Doses Of CP-690,550 In Subjects With Moderate To Severe Chronic Plaque Psoriasis

Eunice Chen
- Modulation of hypoxia to enhance nanoparticle uptake and tumor p02 guided radiotherapy with magnetic hyperthermia
- Theranostics for head and neck cancer using hypoxia-targeted, fluorescent antibody-labeled nanoparticles
- Tissue Oxygenation

Jack Cronenwett
- Vascular Study Group of New England
- Aortic Aneurysm
- Zenith Fenestrated AAA Endovascular Graft Clinical Study
- Endurant Stent Graft system US clinical study
- Zenith TX2 Thoracic Aortic Aneurysm Endovascular Graft Post-Market Approval Study

Susan Durham
- Natural History of Asymptomatic Chiari 1 Malformation in The Pediatric Population

Burton Eisenberg
- Phase II 5 years of Adjuvant Gleevec for high risk GIST
- Lipid Metabolism in a Liposarcoma Model
- Phase II trial of IMRT for extremity/trunk soft tissue sarcoma

Cherie Erkmen
- An Analysis of the Management and Microbiology of Thoracic Empyemas
- Fluorescence Imaging of Lung Tumors
- Non-invasive ventilation following esophagectomy
- Molecular Markers from EBUS samples
- EBUS to determine significance of mediastinal adenopathy in patients with previous malignancy
- EBUS as the only invasive staging modality
- A Phase II Study of neoadjuvant Therapy with cisplatin, Docetaxel, Panitumumab plus Radiation Therapy Followed by Surgery in Patients with Locally Advanced Adenocarcinoma of the Distal Esophagus

Kadir Erkmen
- Coregistered Fluorescence-Enhanced Resection of Brain Tumor
- Cerebral aneurysm inflammation: prospective correlation of the preoperative use of 18F-FDG PET/CT and ultra-small superparamagnetic iron oxide particles (USPIOs) assisted MRI with postoperative histologic results in human subjects

Mark Fillinger
- Zenith TX2 Thoracic Aortic Aneurysm Endovascular Graft Post-Market Approval Study
- Endologix TAG-08-03
- Infrarenal Abdominal Aortic Aneurysms (AAA)
- Valor
- Staple 2-The Pivotal Study of the Aptus Endovascular AAA Repair System
- Gore TAG-08-01
- Prospective, multicenter, single-arm study TAG 08-02
- Unite
- Zenith Fenestrated AAA Endovascular Graft Clinical Study Preserve
- Low Profile TAA
- Pythagorus
- Pevar
- Endorefix, Lombard
- Endurant Stent Graft system US clinical study
- Zenith Fenestrated AAA Endovascular Graft Clinical Study
- ENGAGE PAS
- Ventana Pivotal Trial
- ATRIUM I Cast Iliac Stent Pivotal Study

Richard Freeman
- Surgical Outcomes Assessment Program Database Version 2
CLINICAL TRIALS AND RESEARCH

Phillip Goodney
- Understanding Variation in Treatment Intensity with Lower Extremity PAD
- Society for Vascular Surgery Lifeline Award Supplemental Funding Award
- Regional Variation in Treatment Intensity with Lower Extremity PAD
- Understanding Regional Variation in Treatment Intensity with PAD
- Development of a disease-specific quality of life measure for patients with critical limb ischemia
- Development of a Glucose Management Service for Vascular Surgery Patients
- Vascular Outcomes Research Using Regional Registries
- Effectiveness of Thoracic Endovascular Aneurysm Repair (TEVAR) in Medicare Patients
- Zenith Fenestrated AAA Endovascular Graft Clinical Study
- Endurant Stent Graft system US clinical study
- Zenith TX2 Thoracic Aortic Aneurysm Endovascular Graft Post-Market Approval Study
- Atrium I Cast Iliac Stent Pivotal Study

E. Ann Gormley
- Vascular Study Group of New England

P. Jack Hoopes
- CCNE
- IMI Retinal Implant
- Spinal Cord Cooling
- Euclid Eye Study
- Evaluation of Healing
- Endoluminal Pyloric

Carolyn Kerrigan
- Study of the Safety and Effectiveness of the Mentor Contour Profile Gel Mammary Prosthesis in Subjects who are undergoing Primary Breast Augmentation, Primary Breast Reconstruction or Revision
- An Evaluation of Dupuytren’s Contracture Treatment Outcomes

S. Scott Lollis
- Magnetic Resonance Elastography in Hydrocephalus

Donald Likosky
- Redesigning Cardiac Surgery to Reduce Neurologic Injury
- Bubble Study
- Surgical Outcomes Assessment Program Database Version 2

Mary Jo Mulligan-Kehoe
- Mechanisms of PAI-1 Induced Anti-Angiogenesis

Brian Nolan
- Effect of watchful-waiting for AAA on quality of life
- Critical limb ischemia and tibial occlusive disease Study to assess outcomes of patients with critical limb ischemia over two years
- Quality of Life in People with Abdominal Aortic Aneurysms Multicenter study to develop disease specific measures of quality of life in patients undergoing surveillance for AAA, validate and test nationally in a diverse population of patients
- Developing Quality of Life Measures for Patients with an Abdominal Aortic Aneurysm
- Study to develop disease specific measures of quality of life in patients undergoing surveillance for AAA
- Zenith Fenestrated AAA Endovascular Graft Clinical Study
- Zenith TX2 Thoracic Aortic Aneurysm Endovascular Graft Post-Market Approval Study
- Staple 2-The Pivotal Study of the Aptus Endovascular AAA Repair System
- Atrium I Cast iliac Stent Pivotal Study

Nicole C. Pace
- A Phase 3, Multi Site, Randomized, Double Blind, Placebo Controlled, Parallel Group Study Of The Efficacy And Safety Of 2 Oral Doses Of CP-690,550 In Subjects With Moderate To Severe Chronic Plaque Psoriasis
- A Randomized, Placebo-Controlled, Double-Blind, Parallel Group, Multi-Center Phase llb Dose Finding Study of M518101 in Plaque Psoriasis Patients

Susan Pepin
- PDE5 Inhibitor Exposure
- Identifying Current Treatment Options and Outcomes for Patients with Idiopathic Intracranial Hypertension (IIH)

Richard Powell
- Crest
- Sapphire
- Vascular Graft
- Aastrom, Protocol ABI-55-0610-1 Rev. 03 – Group study to evaluate the efficacy, safety, and tolerability of ixmyelocel-T in subjects with critical limb ischemia and no options for revascularization
- The Gore FREEDOM Study FRS 09-05
- Carotid Angioplasty and Stenting versus Endarterectomy in Asymptomatic Subjects Who Are at Standard Risk for Carotid Endarterectomy with Significant Extracranial Carotid Stenotic Disease (ACT I)

David Roberts
- Coregistered Fluorescence-Enhanced Resection of Brain Tumor
- Electrical impedance-based Imaging of Brain Compliance in an Animal Model
- Preoperative Image Updating for Guidance during Brain Tumor Resection
- Magnetic Resonance Elastography in Hydrocephalus
- Microelectrodes in Epilepsy
- Mechanisms of Cognitive impairment Following Early Life Seizures
- Advanced Surgical Center for Translational Research at Dartmouth
- RNS System Long Term Treatment Clinical Investigation
- Responsive Neurostimulator (RNS) System Pivotal Clinical Investigation
- Frameless Robotic Stereotactic Brain Biopsy: Feasibility, Diagnostic Yield and Safety
- Do Occipitotemporal Hippocampal Depth Electrodes Have A Role In Intracranial Epilepsy Monitoring?
- Subdural interhemispheric grid electrodes for intracranial epilepsy monitoring: feasibility, safety and utility
- Coregistered Fluorescence-Enhanced Resection of Malignant Glioma/Imaging Correlates of Tumor Specific Molecular Changes
- Modeling of Brain Deformation during Intracranial Surgery

Kari Rosenkranz
- Delayed Complications of Mammosite Partial Breast Irradiation
Eva Rzucidlo
- Harvest
- Randomized Controlled Study Comparing Treatment of Femoropopliteal Disease with Primary Stenting and Post Angioplasty vs. Primary Stenting and Post Cryoplasty
- Zenith Fenestrated AAA Endovascular Graft Clinical Study
- Endurant Stent Graft system US clinical study
- Zenith TX2 Thoracic Aortic Aneurysm Endovascular Graft Post-Market Approval Study
- Staple 2-The Pivotal Study of the Aptus Endovascular AAA Repair System
- Atrium I Cast Iliac Stent Pivotal Study

James Saunders
- Automated System for Digital Measurements of Ear Canal Geometry

Mark Savellano
- New Strategies for Photoimmunodetection/therapy

Nathan Simmons
- Coregistered Fluorescence-Enhanced Resection of Brain Tumor
- Implantable Resonator

Kerrington Smith
- DHMC Pancreas Cancer Database
- Pancreas Surgery Drain VS No Drain Randomized Prospective Multicenter Trial
- Pancreas cancer tumor xenograft program

David Stone
- Atrium I Cast Iliac Stent Pivotal Study
- A potential Novel Risk Factor for Peripheral Vascular Disease
- Zenith Fenestrated AAA Endovascular Graft Clinical Study
- Endurant Stent Graft System US Clinical Study
- Zenith TX2 Thoracic Aortic Aneurysm Endovascular Graft Post-Market Approval Study
- Staple 2-The Pivotal Study of the Aptus Endovascular AAA Repair System

Dale Collins Vidal
- Mastectomy Reconstruction Outcomes Consortium (MROC) Study
- Abdominal Morbidity - BREAST-Q Study

Daniel Walsh
- Zenith Fenestrated AAA Endovascular Graft Clinical Study
- Endurant Stent Graft System US Clinical Study
- Zenith TX2 Thoracic Aortic Aneurysm Endovascular Graft Post-Market Approval Study
- Staple 2-The Pivotal Study of the Aptus Endovascular AAA Repair System

Michael Zegans
- Steroid Ulcer Treatment Trial (SCUT)
- Myocotic Ulcer Treatment Trial (MUTT)
- Pre-existing Blindness in Patients Presenting with Bacterial Corneal Ulcers
- Standardization of Uveitis Nomenclature (SUN) Study
- Inhibition of Pseudomonas Aeruginosa Biofilms by Polysorbate 80

Robert Zwolak
- Endurant Stent Graft System US Clinical Study
- Staple 2-The Pivotal Study of the Aptus Endovascular AAA Repair System
- Atrium I Cast Iliac Stent Pivotal Study

Kathryn A. Zug
- Genetic Predisposition to Allergic Contact Dermatitis
Department of Surgery

Donald S. Likosky


CT Surgery

Lawrence J. Dacey


Cherie P. Erkmen


William C. Nugent Jr.

Dermatology

Kathryn A. Zug

General Surgery

Richard J. Barth Jr.


Kenneth W. Burchard

Burton L. Eisenberg


Samuel S. R.G. Finlayson


Stefan D. Holubar


Kari M. Rosenkranz


Kerrington Smith


Maxillofacial

Rocco R. Addante

Neurosurgery

Ball, Perry A.


Kadir Erkmen


**PUBLICATIONS**


**Ophthalmology**

Michael E. Zegans


**Pediatric Surgery**

Daniel B. Herz


Joseph A. Paydarfar Maddox PT, Davies L, Paydarfar JA. A 17 Year Institutional Experience at a Rural Academic Medical Center. Accepted by Annals of Otologyryngology.


James E. Saunders


Leslie McGuigan


Paul Merguerian

Plastic Surgery
Carolyn L. Kerrigan

Emily B. Ridgway


Ridgway EB, Andrews BT, Labrie A, Padwa BL, Mulliken JB. Positioning the Caudal Septum at time of Primary Lip Repair. Accepted J Neurosurgical Focus.

Ridgway EB, Berry-Candelario J, Gronndt RT, Rogers GF; Proctor MR. The Management of Sagittal Synostosis with Endoscopic Craniectomy and Post-Operative Helmet Molding Therapy. Accepted J Neurosurgical Pediatr.

Ridgway EB, Gronndt RT, Berry-Candelario J, Rogers GF; Proctor MR. Endoscope-Assisted Strip Craniectomy and Post-Operative Helmet Therapy for Treatment of Craniosynostosis. Accepted Neurosurgical Focus.


Joseph M. Rosen


Mitchell A, Stotland


Dale Collins Vidal


Surgical Research Lab
P. Jack Hoopes


Transplantation Surgery

David A. Axelrod


Michael C. Chobanian


Richard B. Freeman


Urology

Elizabeth A. Gormley

John A. Heaney

Vascular Surgery

Jack L. Cronenwett


Philip P. Goodney


Brian W. Nolan


Richard J. Powell


Brown KR, Rzucidlo EM. Acute and Chronic Radiation Injury. JVS 2011 53(1suppl); 15s-21s.


David H. Stone


**PUBLICATIONS**


**Daniel B. Walsh**


**Robert M. Zwolak**

This 2011 Annual Report was produced by the Department of Surgery with contributions from numerous faculty and staff members. A special thank you to Laura Stancs and to Bob Hagen of The Hagen Group, Hanover, NH for all their efforts in coordinating this annual report.