Chairman’s Letter

NorthShore University HealthSystem’s (NorthShore’s) Department of Surgery is driven by not only its commitment to provide the finest possible clinical care, but also its absolute dedication to research and education.

Our exceptional surgeons are united by NorthShore’s mission “to preserve and improve human life” as well as a distinct culture of scholarship and discovery. While we continue to grow in terms of clinical volume, drawing patients from throughout the region, we are also making a difference on a broader scale—generating new knowledge with contributions in peer-reviewed publications and national and international presentations.

Our fellowship-trained faculty is well-represented in regional and national organizations, and many of them are recognized “Top Doctors” by Castle Connolly and other healthcare reviewers.

As Chairman of this esteemed Department since 2007, I have been privileged to lead a talented and growing team willing to make the sacrifices necessary to advance medical science and teach the next generation of surgeons.

Residents, interns and medical students from the University Chicago consistently rank their experience at NorthShore as excellent and have repeatedly bestowed top teaching awards on our surgeons.

The Department of Surgery, composed of 10 Divisions, supports research with an annual contribution of $2 million to NorthShore Research Institute. Working collaboratively, surgeons from across disciplines including breast, colorectal, ophthalmology, plastic and thoracic, have combined forces and resources to hire statisticians and epidemiologists and further support multiple research initiatives. We know we are stronger working collectively and sharing resources, and our increasingly successful research endeavors reflect that ethos.

The number of clinical trials available to our patients continues to grow as does the amount of external funding awarded to our physician-scientists.

We have been able to leverage NorthShore’s sophisticated Electronic Medical Record (EMR) system and its Center for Biomedical Research Informatics (CBRI) and have developed comprehensive databases in breast, colorectal, pancreatic and prostate surgery allowing for ongoing analysis and study aimed at improving patient outcomes.

The Grainger Center for Simulation and Innovation (GCSI) continues to draw students and surgeons at all levels of their career for the most advanced and effective training opportunities.

Major recruits this past year support the development of our Program for Personalized Cancer Care, an exciting initiative bringing immediate benefits to our patients. These and other highlights are described in the pages of this report, which we believe reflects our proud tradition and promising future.
Innovation Drives Improved Care

NorthShore’s Department of Surgery is distinguished by its involvement in numerous innovative initiatives and endeavors. From the exciting new Program for Personalized Cancer Care to our pioneering Center for Biomedical Research Informatics, 3-D printing technology and Grainger Center for Simulation and Innovation, our surgeons leverage an array of sophisticated resources to advance knowledge and continually enhance patient care and safety. Our surgeons are willing to step out of their comfort zones, push boundaries and do what it takes to develop new avenues to drive improved outcomes.

Program for Personalized Cancer Care

Over the past two years, the Department of Surgery, working closely with the NorthShore Research Institute, has helped establish a unique Program for Personalized Cancer Care (PPCC). This major initiative is a key component of the NorthShore Center for Personalized Medicine, along with other major components, including the Center are the Genomic Health Initiative led by Pablo Gejman, MD, the Health Heritage Program led by William Knaus, MD, and the Center for Biomedical Research Informatics led by Jonathan Silverstein, MD, MS, FACS, FACMI. The PPCC represents a new paradigm for cancer care. Rather than a “one size fits all approach,” our goal is to get it right the first time by developing precise and personalized cancer care strategies through the analysis and integration of individual clinical and genetic information.

NorthShore is well-positioned to be a leader in personalized cancer care leveraging several unique strengths: (1) our large, loyal and stable patient population who receive lifelong healthcare at NorthShore; (2) our comprehensive Electronic Medical Record (EMR) system and data warehouse in which all of our patients’ clinical information is captured and securely stored electronically; (3) our sophisticated computational medicine and bioinformatics team possessing the capability to analyze and integrate vast amounts of clinical (phenotypic) and genomic (genotypic) information; and (4) our well-established molecular pathology laboratory and large cancer biological sample repository in which new genetic and biomarker tests are evaluated and implemented.

In addition to the strengths noted above and as shown in the accompanying algorithm, a successful personalized cancer care program also requires experienced

Personalized Cancer Care Model

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NorthShore Patients → Genomic Analyses → Genotypic Profile → Integration of Care (Clinicians)

Genotypic Profile → Phenotypic Profile

Clinical Information → Electronic Medical Record/Data Warehouse

NorthShore Patients
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Who’s Who in the World/America/Midwest
Charles Brendler, MD, Urology
Joseph Muldoon, MD, General Surgery
Richard Prinz, MD, Surgical Oncology

Chicago Magazine Top Doctors
Bruce Bauer, MD, Plastic Surgery
Charles Brendler, MD, Urology
John Howington, MD, Thoracic Surgery
Mark Talamonti, MD, Surgical Oncology
David J. Winchester, MD, Surgical Oncology

Castle Connolly America’s Top Doctors
Ermilo Barrera Jr., MD, Surgical Oncology
Charles Brendler, MD, Urology
Michael Blum, MD, Urology
Troy Close, MD, Ophthalmology
Mark Gerber, MD, Otolaryngology
Stephen Haggerty, MD, General Surgery
Joshua Herz, MD, Ophthalmology
John Howington, MD, Thoracic Surgery
Thomas Keeler, MD, Urology
Lawrence Krause, MD, Surgical Oncology
Marian Macsai, MD, Ophthalmology
Michael McGuire, MD, Urology
Joseph Muldoon, MD, General Surgery
Paul Pearson, MD, Cardiovascular Surgery
Peter Rabiah, MD, Ophthalmology
Paras Shah, MD, Ophthalmology
Nancy Schindler, MD, MHPPE, Vascular Surgery
David J. Winchester, MD, Surgical Oncology

NorthShore University HealthSystem is ranked #9 in Illinois and in the Chicago metropolitan area.
Innovation Drives Improved Care
(continued)

scientists to perform complex genetic analyses and develop individualized genomic profiles. As described below, the recent recruitment of outstanding scientists from prestigious medical institutions across the country—including Northwestern University, MD Anderson Cancer Center, St. Louis University, Vanderbilt University and Wake Forest University—has expanded our capability to provide cutting-edge and truly personalized care for our cancer patients.

Over the past year, we have been fortunate to recruit three senior and internationally recognized scientists to lead this new program:

- **Jianfeng Xu, MD, DrPH**, is the Director of the PPCC and also the Ellrodt-Schweighauser Chair of Genomic Cancer Research and Vice President for Translational Research. He was recruited from Wake Forest School of Medicine where he was Professor and Director of the Center for Cancer Genomics.

  Dr. Xu is an internationally known genomic translational researcher who has been working on genetic studies of cancer and other diseases for more than 20 years. He has received multiple grants from the National Institutes of Health and has published more than 300 papers in journals such as *New England Journal of Medicine* and *Nature Genetics*.

- **Simon Hayward, PhD**, is the Co-Director of the PPCC and Director of the Cancer Biology Core. After receiving his PhD in London and completing fellowship training at the University of California San Francisco, he moved to Vanderbilt in 2001 where he became Professor of Urologic Surgery and Cancer Biology as well as Director of the Benign Urologic Diseases Center.

  Dr. Hayward has more than 25 years of experience with in vitro and in vivo models of prostate cancer. His research focuses upon understanding the role of the tumor microenvironment—in particular, fibroblasts and inflammatory cells—in prostate cancer progression and in dissecting the systemic and local influences leading to benign prostatic hyperplasia and associated symptoms.

- **S. Lilly Zheng, MD**, is the Director of the newly created Genotyping Core Facility. She was recruited from Wake Forest School of Medicine where she was Professor and Director of the Genotyping Laboratory at the Center for Genomics and Personalized Medicine Research.

  Dr. Zheng has more than 12 years of experience in directing a high-throughput genotyping and sequencing laboratory and has published more than 180 peer-reviewed papers on genomics and complex diseases.

Our PPCC will initially focus on prostate and breast cancers, the most common cancers in American men and women. In the near future, we will recruit additional scientists and expand genomic-based care to other major solid organ cancers, including head and neck, pancreatic and colorectal cancers. Ultimately, our goal is to offer this strategy to all cancer patients cared for at NorthShore through Kellogg Cancer Center and the Department of Surgery.
Program for Personalized Cancer Care Research Team

Jianfeng Xu, MD, DrPH  
Vice President of Translational Research and Director of PPCC  
Recruited from Wake Forest School of Medicine

Vadim Backman, PhD  
Professor of Biomedical Engineering  
Northwestern University

Susan Crawford, DO  
Director of Experimental Pathology, Phenotyping and Imaging Core  
Recruited from St. Louis University School of Medicine

Omar Franco, MD, PhD  
Cancer Biologist  
Recruited from Vanderbilt University School of Medicine

Simon Hayward, PhD  
Director of Cancer Biology Core  
Recruited from Vanderbilt University School of Medicine

Yuan Ji, PhD  
Director of Computational Medicine Core  
Recruited from MD Anderson Cancer Center

Chung Lee, PhD  
PPCC Senior Scientific Advisor  
Recruited from Northwestern University Feinberg School of Medicine

Wennuan Liu, PhD  
Director of Tumor Genomics  
Recruited from Wake Forest School of Medicine

Margo Quinn, MS  
Administrative Director of Research

Prem Seth, PhD  
Director of Gene Therapy

Chi-Hsiung Wang, PhD  
Director of Biostatistics and Research Informatics Core  
Recruited from Northwestern University Feinberg School of Medicine

S. Lilly Zheng, MD  
Director of Genotyping Core Facility  
Recruited from Wake Forest School of Medicine

Grainger Center for Simulation and Innovation

The recently named Grainger Center for Simulation and Innovation (GCSI) has quickly become one of the leading surgical simulation training centers in the country. The state-of-the-art facility, established in large part through the generosity of The Grainger Foundation, features the most advanced simulation equipment and an expert team of clinicians and scientists led by Michael Ujiki, MD, a recognized expert in minimally invasive surgery.

More than 4,163 individuals came through GCSI for education courses in 2014 with 419 educational labs offered. All University of Chicago Pritzker School of Medicine surgical trainees rotate through GCSI, and there is a new comprehensive simulation curriculum in place for residents and students. Residents from the University of Chicago, one of the top-ranking programs in the country, have evaluated their training at GCSI as their “best learning experience” over five years—even exceeding time spent in the operating room.

GCSI and its talented faculty have been increasingly attracting national and international attention both for sophisticated surgical instruction, and as a destination for industry design and testing of new surgical instrumentation.

NorthShore’s GCSI represents the future of surgical education and reflects the critically important emphasis on safety and quality in healthcare. It is also an extremely productive ground for research, with 13 publications and 22 national presentations in 2014. The potential for growth at GCSI in new educational modules and research and development is virtually unlimited.

Center for Biomedical Research Informatics

The Center for Biomedical Research Informatics (CBRI) at NorthShore partners with the Department of Surgery on an array of pioneering initiatives involving innovative collection and use of biomedical data. A renowned leader in informatics, Jonathan Silverstein, MD, MS, FACS, FACMI, directs the CBRI and has led efforts to build on NorthShore’s award-winning Electronic Medical Record (EMR) system and extensive data warehouse.

Structured clinical documentation projects supported by CBRI involve many specific surgical domains including pancreas, thyroid, lung, vascular and ophthalmology. Lead surgeons in each project help develop the exact data points that are entered directly into the EMR. These data points can be tracked over long periods of time and used to develop quality reporting, dashboards, predictive models and a virtually limitless array of research endeavors. NorthShore is truly leading the way in this arena, leveraging informatics to drive quality improvement in real time and generating best practices in surgery.

The Department of Surgery’s robust collaboration with the CBRI’s team of statisticians has led to an incredibly active analytics program and a rapidly growing portfolio of outcomes research and peer-reviewed papers. Many of these papers have led to predictive models that are already aiding surgical decision making and improving patient outcomes.

NorthShore’s new 3-D Visualization and Fabrication Lab is yet another exciting area of innovation allowing surgeons to push boundaries and better serve patients. Using images from CT and MRI scans, the 3-D printer is used to create exact anatomical models, enabling surgeons to plan and practice complex procedures ahead of time, allowing them to work more efficiently and reduce patient time in the operating room. The plastic models replicate bone and can also re-create soft tissue including cartilage and skin. CBRI Analyst Nigel Parsad has played a pivotal role in programming the sophisticated printer to create valuable 3-D structures.

The Grainger Center for Simulation and Innovation (GCSI) helps train students and surgeons from across the region and country.
Surgical Research

NorthShore surgeons are dedicated to improving patient outcomes, a mission that drives our commitment to research. Our team is involved in a broad range of clinical trials and research initiatives.

The Surgical Research Office provides essential support, backing research endeavors designed to advance all aspects of surgical care. NorthShore’s Surgical Research team includes physicians, nurses and research associates who are specifically trained and certified in clinical research. They work collaboratively with surgeons across the Department, helping to guide patients through the clinical trial process—identifying patients who qualify for clinical trials, determining eligibility, obtaining informed consent, monitoring adherence to protocols, representing investigators to research and regulatory organizations as well as collecting and validating data. The office also maintains a variety of clinical databases and coordinates the collection of solid tumors for NorthShore’s biospecimen repositories.

The Surgical Research Office supports members of the Department of Surgery in research endeavors with staff trained and certified in clinical research. Members include (from left, seated): Gnathan Carpenter, Mary Turk, Klara Agnes Brugger, Sarah Rabbitt and Karen Ohara. (From left, standing): Marna Burright, Jackie Pruitt, Patricia Tiffin Park, JoAnn Carbray, Erik Liederbach, Veronica Rundell, Ujala Bokhary, Claudia Fredian and Susan Jane Stocker.

Surgical Research Organizational Chart

CORE Surgical Research Office

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<thead>
<tr>
<th>Position</th>
<th>Name</th>
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<tbody>
<tr>
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<td>Mark Talamonti, MD</td>
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<tr>
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Divisional Satellite Research Office

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### Division of Cardiac Surgery

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<tr>
<td>Pearson</td>
<td>Flow Mediated Dilation of Human Coronary Arterioles</td>
<td>NorthShore University Health System</td>
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<td>Pearson</td>
<td>Patient Preference for Bioprosthetic Aortic Valve Replacement Over the Last Decade at NorthShore University HealthSystem</td>
<td>NorthShore University Health System</td>
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<td>Management and Outcomes of Patients with Severe Aortic Stenosis at NorthShore University HealthSystem: A Retrospective Chart Review</td>
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<td>Pearson</td>
<td>Ablation for the Treatment of Concomitant Atrial Fibrillation in Non-Paroxysmal Patients (ATTAC-AF)</td>
<td>Endoscopic Technologies, Inc.</td>
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<td>Pilot Study Protocol: Selective Cerebral Hypothermia Using a Cooling Head Cover During Elective Cardiac Surgery Under Cardiopulmonary Bypass</td>
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### Division of General Surgery

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<td>Indirect Inguinal Hernia Repair Using the “Double Silt” Technique. Our Initial Experience</td>
<td>NorthShore University Health System</td>
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<td>Linn</td>
<td>A Randomized Controlled Study of Self-Fixating Mesh versus Non-Fixating Polyester Mesh for Laparoscopic Inguinal Hernia Repair</td>
<td>NorthShore University Health System</td>
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<td>Muldoon</td>
<td>N1048: A Phase IIIb Trial of Neoadjuvant FOLFOX with Selective Use of Combined Modality Chemoradiation versus Preoperative Combined Modality Chemoradiation for Locally Advanced Rectal Cancer Patients Undergoing Low Anterior Resection with Total Mesorectal Excision</td>
<td>Alliance</td>
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<td>Ujiki</td>
<td>Development of a Training Tool for Laparoscopic Hiatal Hernia Repair and Fundoplication</td>
<td>NorthShore University Health System</td>
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<td>Ujiki</td>
<td>A Randomized, Subject and Evaluator-Blinded, Parallel-Group, Multicenter Clinical Trial Using an Endoscopic Sutting Device (g-Cath EZ Suture Anchor Delivery Catheter) for Primary Weight Loss, Protocol No. 50352 TRP Essential Study</td>
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### Division of Ophthalmology

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<td>Close</td>
<td>A Prospective Case-Crossover Study to Evaluate the Possible Association Between the Use of PDE5 Inhibitors and the Risk of Acute Nonarteritic Anterior Ischemic Optic Neuropathy (NAION)</td>
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<tr>
<td>Herz</td>
<td>A Multicenter, Randomized Study of the Efficacy and Safety of NVC-422 Ophthalmic Solution for the Treatment of Adenoviral Conjunctivitis</td>
<td>NovaBay Pharmaceuticals</td>
</tr>
<tr>
<td>Macsai</td>
<td>Effect of Cornel Preservation Time on Long-Term Graft Success (CPTS)</td>
<td>NEI</td>
</tr>
<tr>
<td>Maker</td>
<td>A Phase II Evaluation of Topical NSAIDs in Eyes with Non Central Involved DME (ORCR protocol R)</td>
<td>NEI/ALCON</td>
</tr>
<tr>
<td>Maker</td>
<td>Treatment for Central-Involved Diabetic Macular Edema in Eyes with Very Good Visual Acuity</td>
<td>NEI/Regeneron</td>
</tr>
</tbody>
</table>

### Division of Otolaryngology

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Clinical Trial</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhayani</td>
<td>Impact of Thyroid Disease on Sleep Disorders</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Chen</td>
<td>Socio-Economic Status and Tympanostomy Tube Placement in Children in Chicago, IL and its Suburbs, 2003-2009</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Gerber</td>
<td>A Randomized Trial of the Management of Pediatric Chronic Rhinosinusitis with or without Balloon Sinuplasty</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Gerber</td>
<td>Comparison of Extracapsular and Intracapsular Tonsillectomy</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Raviv, S</td>
<td>Effects of Endoscopic Sinus Surgery for Chronic Sinusitis on Asthma Control</td>
<td>NorthShore University Health System</td>
</tr>
</tbody>
</table>

### Division of Plastic Surgery

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Clinical Trial</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bauer</td>
<td>Creation of a Tissue Repository for Biological Samples from Congenital Nevi and Other Neurocutinopathies</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Howard</td>
<td>A Retrospective Review of Pain Control Using Expand vs. Bupivacaine Pain Pump in Implant-Based Breast Reconstruction</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Sisco</td>
<td>Does the Use of ADM Improve Breast Mound Projection When Compared to Total Muscle Coverage?</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Sisco</td>
<td>Donor Site Morbidity in Free-Flap Reconstruction of Pediatric Congenital Melanocytic Nev: Long-Term Follow-Up.</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Sisco</td>
<td>Development and Maintenance of a Comprehensive Breast Reconstruction Registry at NorthShore University HealthSystem</td>
<td>NorthShore University Health System</td>
</tr>
</tbody>
</table>

### Division of Surgical Oncology

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Clinical Trial</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moo-Young</td>
<td>The Establishment of a Multi-Disciplinary Comprehensive Database of Patients for Thyroid Nodular Disease</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Talamonti</td>
<td>Comprehensive Assessment for Clinical Care and Surgical Management Among Individuals with Pancreatic Pathology</td>
<td>University of Chicago</td>
</tr>
<tr>
<td>Winchester</td>
<td>A Phase II Study Evaluating the Role of Sentinel Lymph Node Surgery and Axillary Lymph Node Dissection Following Preoperative Chemotherapy in Women with Node Positive Breast Cancer (T0-4, N1-2, MO) at Initial Diagnosis, ACOSOG Z1071</td>
<td>ACOSOG</td>
</tr>
<tr>
<td>Yao</td>
<td>MicroRNAs as Novel Biomarkers for Breast Cancer Prognosis</td>
<td>NorthShore/University of Chicago</td>
</tr>
</tbody>
</table>

### Division of Thoracic Surgery

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Clinical Trial</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howington</td>
<td>CALGB 140503 A Phase III Randomized Trial of Lobectomy versus Sublobar Resection for Small (≤2 cm) Peripheral Non-Small Lung Cancer</td>
<td>CALGB</td>
</tr>
<tr>
<td>Howington</td>
<td>Best Practice in VATS Lobectomy for Lung Cancer: Database Management and Analytics for a Longitudinal Study to Optimize Care for Lung Cancer Patients</td>
<td>Ethicon</td>
</tr>
<tr>
<td>Howington</td>
<td>Establishment and Maintenance of a Comprehensive Thoracic Tumor Data Registry and Biorepository</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Howington</td>
<td>Non-Small Cell Lung Cancer Tissue Sample Study</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Kim</td>
<td>Intercostal Liposomal Bupivacaine Injection Efficacy Compared to Continuous Subpleural Bupivacaine Infusion</td>
<td>NorthShore University Health System</td>
</tr>
</tbody>
</table>

### Division of Urology

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Clinical Trial</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albaugh</td>
<td>The Lived Experience of Men with Sexual Dysfunction after Prostate Cancer Treatment</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Brendler</td>
<td>ACCESS-Pca (Advancing Quality Care, Education and Symptom Support—Prostate Cancer)</td>
<td>American Cancer Society Illinois Division</td>
</tr>
<tr>
<td>Helfand</td>
<td>Genomic Markers In Transitional Cell Cancer of the Bladder, Renal Pelvis and Ureter: Sample Acquisition for Methods Development and Discovery</td>
<td>Genomic Health</td>
</tr>
<tr>
<td>McGuire</td>
<td>3-Dimensional Transrectal Ultrasound for Prostate Cancer Diagnosis and Surveillance</td>
<td>NorthShore University Health System</td>
</tr>
<tr>
<td>Novakovic</td>
<td>Fat and Its Relationship to Prostate, Bladder and Kidney Cancer</td>
<td>NorthShore University Health System</td>
</tr>
</tbody>
</table>

### Division of Vascular Surgery

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Clinical Trial</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caprini</td>
<td>Clinical Study to Evaluate the Effectiveness of Cutimed Siltec B and Cutimed Sorbact Dressings with Comprilan/Jobst UlcerCare Compression for the Management of Venous Leg Ulcers</td>
<td>BSN (Germany)</td>
</tr>
<tr>
<td>Desai</td>
<td>A Prospective, Multicenter, Single-Blind, Randomized, Controlled Trial Comparing the Lutonix® Drug Coated Balloon vs. Standard Balloon Angioplasty for Treatment of Femoro-popliteal In-Stent Restenosis</td>
<td>Lutonix</td>
</tr>
<tr>
<td>Gupta</td>
<td>Screening and Access to Health Care for Vascular Disease in Urban and Suburban Patient Populations</td>
<td>NorthShore/Medtronic</td>
</tr>
<tr>
<td>Gupta</td>
<td>A Randomized, Open Label, Parallel-Group, Multi-Center Trial To Compare Efficacy and Safety of TachoSil® vs. Surgicel® Original for the Secondary Hemostatic Treatment of Needle Hole Bleeding in Vascular Surgery</td>
<td>Takeda</td>
</tr>
<tr>
<td>Lind</td>
<td>Complications in Catheter-Directed Thrombolysis</td>
<td>NorthShore</td>
</tr>
<tr>
<td>Schindler</td>
<td>Implementation of an Excellence in Teaching Recognition System: Feasibility and Outcomes</td>
<td>NorthShore</td>
</tr>
</tbody>
</table>

For more information on NorthShore’s clinical trials, visit northshore.org/research/clinical-trials
Translational Research

NorthShore focuses its scientific inquiry on the direct improvement of clinical care and patient outcomes. Our physicians, scientists and researchers have built our reputation on this translational approach to research. The Department of Surgery actively participates in a variety of important research studies involving several major cancers, which are highlighted below.

Bioinformatics and Computational Medicine

Big-Data Science in Genomics Medicine
Investigator: Yuan Ji, PhD
Summary: Our research spans a wide range of biological applications, including gene expression and micro RNA studies, functional protein arrays, and next-generation sequencing (NGS). Our current focus is to apply and extend the statistical models for NGS data, and our recent projects can be reviewed at http://www.compgenome.org. We have produced useful big-data tools for accessing, processing, analyzing and interpreting large biomedical data, such as the multimodal genomics data from The Cancer Genome Atlas (TCGA). Our work has been recognized by the scientific community with significant grant funding (http://big.uchicago.edu/projects/are-normal-cells-genetically-identical) and high-impact publications in journals such as Nature Methods (Zhu et al., 2014). Over the past year, our software tools have been accessed by thousands of scientists around the world.

Adaptive Clinical Trial Designs
Investigator: Yuan Ji, PhD
Summary: Upgrading the designs of clinical trials is critical to improve the efficiency of drug development and patient safety. Adaptive designs, which have been a major focus of my research for the past decade, are now at the center stage of biostatistics research for experimental methods. Our recent publication (Ji and Wang, 2013) in the Journal of Clinical Oncology establishes a new gold standard for designing phase I oncology trials. We have recently made available what we believe to be the first Web-based, next-generation tool for trial designs at http://www.compgenome.org/NGDF, and this instrument is being used by several major pharmaceutical companies and research institutes. Our team is developing similar software tools aimed at significantly improving the current status of clinical trial design and implementation.

Dr. Yuan Ji and his team have developed Zodiac, a big-data cancer resource and computational tool that integrates biological knowledge and evolving cancer genomics information from large-scale national studies. Zodiac contains precise genetic interactions for more than 180 million pairs of genes.

Otolaryngology and Head and Neck Cancer

Head and Neck Cancer and Human Papilloma Virus (HPV)
Investigator: Mihir Bhayani, MD
Summary: Despite an overall decline in the incidence of most head and neck cancers, the incidence of oropharyngeal squamous cell carcinoma (OPSCC) has reached epidemic proportions in the United States and other countries. This is most likely attributable to oral exposure to the human papilloma virus (HPV) that induces molecular alterations in the affected cells of the aerodigestive mucosa leading to carcinoma. Our goal is to identify intracellular factors that facilitate HPV gene expression and lead to the development of carcinoma. Based on these studies, we plan to develop a predictive model for patients with oral HPV infection that can expedite treatment of those patients at risk for developing OPSCC.

Computational Approach to Identification of Prognostic microRNAs (miRNAs) in Head and Neck Cancer
Investigator: Mihir K. Bhayani, MD
Summary: Over the last 50 years, survival of non-HPV-related head and neck cancers improved only minimally, and discovery of new prognostic markers that have therapeutic benefits is urgently needed. We have employed a computational approach using genomic data from tumor tissue by interrogating The Cancer Genome Atlas (TCGA). Using these computational models, we identified miRNA signatures that predict for poor prognosis in head and neck carcinoma. Our goal is to assess the functional effects of these miRNAs and their subsequent therapeutic potential in head and neck cancer.

Surgical Oncology

Breast Cancer
Population Health and Outcomes
Investigators: Katherine Yao, MD, David J. Winchester, MD, Catherine Pesce, MD, Mark Sisco, MD, and Chi-Hsiung Wang, PhD
Summary: Over the past five years, our breast cancer research team has conducted extensive studies in population health utilizing the National Cancer Data Base (NCDB), a large oncology database that collects data on cancer patients from more than 1,400 Commission on Cancer accredited cancer centers across the country. NorthShore was chosen as an alpha and beta site for development of a public use file for the NCDB and has published multiple papers on surgical trends for breast cancer, including the use of sentinel node biopsy, the increasing trend of bilateral mastectomy for breast cancer and the use of reconstruction after mastectomy. In 2014 our team presented at regional and national meetings and received two “posters of exceptional merit” at the American College of Surgeons meeting. Dr. Yao and colleagues have now started a comparative effectiveness and research program that will expand outreach research to other organ sites and utilize other national databases such as the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP), the Nationwide Inpatient Sample and Surveillance, Epidemiology and End Results (SEER)-Medicare to study trends in cancer care and survival outcomes.

Dr. Yao is also currently conducting a survey study in collaboration with the University of Chicago breast surgeons and Survey Lab. This survey asks patients questions regarding why they chose certain surgeries and what sources of information they used to make decisions. The data will be used to help develop a patient decision-making aid that surgeons can administer in the clinic to guide patients through the decision-making process.
Liver Cancer

Hepatic Steatosis and Hepatic Tumor Developed in Centrobin Knockout Mice

Investigators: Qingshen Gao, MD, Mark Talamonti, MD (in collaboration with Susan Crawford and Phillip Fitchev, St. Louis University; and Ye Gao and Grace Demin Zhao, Northwestern University)

Summary: Non-alcoholic fatty liver disease (NAFLD) affects 10 to 24 percent of the general population. NAFLD is an increasingly recognized condition that may progress to end-stage liver disease including liver cancer. The mechanism of NAFLD pathogenesis remains poorly defined. Alterations in the pathways of lipid uptake, synthesis, degradation or secretion are potential metabolic abnormalities that can lead to the development of hepatic steatosis. We identified centrobin as a daughter centriole protein that is required for centriole duplication. Centrobin also plays a role in microtubule stabilization and assembly of the mitotic spindle. We have generated a centrobin knockout mouse model and found that homoygous centrobin knockout mice developed hepatic steatosis. Hepatic tumors were also observed in aged centrobin knockout mice.

The Hippo pathway, first elucidated in Drosophila melanogaster, regulates organ size and tissue homeostasis. Genetic inhibition of this pathway leads to cellular overgrowth reminiscent of tumor hyperplasia. The core components of the Hippo pathway are well-conserved in mammals, and dysregulation of this pathway is associated with cancer in humans. Our analysis of centrobin knockout mice indicated that the Hippo pathway is altered and that centrobin knockout leads to a significant decrease of nuclear localization of YAP1, a downstream effector of the Hippo pathway. Importantly, decrease of nuclear location of YAP1 leads to a significant increase of PPAR1, a transcription factor that stimulates adipogenesis, in hepatocytes. Therefore, the hepatic steatosis and tumors observed in centrobin knockout mice are likely due to dysregulation in the Hippo pathway.

Pancreatic Cancer

Developing a Therapeutic Approach for Pancreatic Cancer with Minimal Side Effects by Targeting a Critical Centrosomal Protein, Centrobin

Investigators: Qingshen Gao, MD, Michael Karraadt, BS, and Mark Talamonti, MD, (in collaboration Hanwen Zhang, Northwestern University)

Summary: We found that the inhibition of centrosome duplication in cancer cells by depleting a critical centrosomal protein, centrobin, leads to cells with three, one or no centrioles, and eventually to cell death; while in normal cells, inhibition of centrosome duplication leads to cells with unduplicated centrioles and cell cycle arrest, but not to cell death. Therefore, we hypothesize that inhibition of centrosome duplication represents a novel therapeutic approach for cancers with potentially few side effects, since normal cells would still be functional while in G1 arrest and would resume their proliferation when centrosome duplication inhibitors decay. Additionally, inhibition of centrosome duplication would not cause heritable DNA mutations leading to further tumorigenesis transmittable to progeny.

Previously, we reported that centrobin interacts with tubulin and its tubulin-binding domain (TuBD) is at its C-terminal 139 aa. Using mutational analysis, we have further localized the tubulin-binding domain to the C-terminal 38 aa. Cell-penetrating peptides (CPP) or protein transduction domains (PTD) such as TAT from the HIV TAT protein have been found to be effective in delivering a wide variety of active proteins and peptides into many tissues in mouse models and are currently being tested in clinical trials. We have designed a set of six overlapping peptides fused with TAT peptides based on the sequence of the C-terminal 38 aa of centrobin. We found that three of these six peptides are remarkably effective in killing cancer cells. We are now in the process of designing more peptides and testing them in a large panel of cell lines for inhibiting centrosome duplication and killing pancreatic cancer cells.

Urology

Prostate Cancer

Cancer Biology and Cell Signaling

Investigators: Simon Hayward, PhD, and Omar Franco, MD, PhD

Summary: Our laboratory has focused for many years on the role of systemic and microenvironmental factors in prostate cancer and benign prostatic hyperplasia. These are common disease conditions that share many contributory components. They are also models of broader processes that occur in other malignant and benign proliferative diseases. The microenvironment surrounding a tumor is a function of both the genetic insults that caused the malignant transformation and the patient’s reaction to this disease. Reaction to a malignancy is a function of both genetic makeup and systemic stress. Thus, the individual nature of a patient is reflected in the manner in which disease progresses once it is established. An understanding of the pathways involved in this process will enable us to identify key functional signaling mechanisms that can be coordinate modified to control disease progression. In addition, an understanding of the role that modifiable systemic stresses such as obesity and diabetes play in disease progression provides additional routes for intervention. In prostate cancer, our long-term goals are to help identify the minority of patients for whom aggressive treatment is the best option, and to provide a sound basis for personalized treatment strategies and interventions to stabilize disease in the majority of men whose disease is less aggressive. We aim to help patients avoid the negative consequences of unnecessary treatment and to maximize our ability to control and monitor tumors over the long term with minimal side effects.

Gene Therapy: The systemic delivery of an oncolytic adenovirus expressing decorin inhibits bone metastasis in a mouse model of human prostate cancer

Investigators: Weidong Xu, PhD, Yuefeng Yang, PhD, Charles Brendler, MD, and Prem Seth, PhD

Summary: In an effort to develop a new therapy for prostate cancer bone metastases, we have created Ad.dcn, a recombinant oncolytic adenovirus carrying the human decorin gene. Infection of the human prostate tumor cell lines PC-3 and DU-145 with Ad.dcn or a non-replicating adenovirus Ad(E1-).dcn resulted in decorin expression; Ad.dcn produced significant inhibition of skeletal metastases. Adenoviral-mediated decorin expression inhibited Met, the Wnt/β-catenin signaling axis, vascular endothelial growth factor A, reduced mitochondrial DNA levels and inhibited tumor cell migration. To examine the anti-tumor response of Ad.dcn, PC-3-luc cells were inoculated in the left heart ventricle to establish bone metastases in nude mice. Ad.dcn, in conjunction with control replicating and nonreplicating vectors, were injected via tail vein. Weekly real-time monitoring by bioluminescence imaging and X-ray radiography showed that Ad.dcn produced significant inhibition of skeletal metastases. We found an increase in animal survival, and analyses of the necropsied mice indicated a significant reduction in tumor burden, osteoclast number, serum TRACP 5b levels, osteocalcin levels, hypercalcemia and inhibition of cancer-related cachexia. We believe that Ad.dcn can be developed as a potential new therapy for prostate cancer bone metastasis.
Urology Genomics (continued)

Genomic-Based Personalized Prostate Cancer Care

Investigators: Jianfeng Xu, MD, DrPh, and Wennuan Liu, PhD

Summary: Research centers on two broad areas: discovery and translation. For discovery, our research includes (1) genetic association studies for inherited genetic variations associated with prostate cancer risk and progression, and (2) cancer genomic studies for acquired genetic and epigenetic changes in tumors that are associated with cancer risk and progression. Both types of discovery studies utilize high-throughput sequencing and genotyping as well as bioinformatics and statistical analysis. For translation, our research involves (1) identification of genomic discoveries that have clinical utilities using evidence-based research, (2) optimization of accurate, simple, cost-effective genomic tests for clinical use, (3) development of a mutation database for interpretation of genomic tests and (4) design and implementation of clinical trials to evaluate the efficacy of novel genomic tests using comparative effective research (CER). Our team will work with surgeons, oncologists, pathologists, informaticians, genomic researchers and patients to develop a personalized, genomic-based cancer care continuum that encompasses prevention, screening, diagnosis, and treatment.

Genetic Markers to Distinguish Indolent from Aggressive Prostate Cancer

Investigators: Brian Helfand, MD, PhD, Charles Brendler, MD, Kristian Novakovic, MD, and Michael McGuire, MD

Summary: NorthShore is a member of the International Consortium for Prostate Cancer Genetics (ICPCG), a group of investigators from North America, Europe and Australia who share an interest in genetic susceptibility for prostate cancer. The ICPCG is analyzing DNA from families afflicted by prostate cancer, and the results of these studies will help identify new genetic biomarkers that can improve current screening and treatment algorithms.

Dr. Helfand is the NorthShore principal investigator for the National Cancer Institute Genetics Working Group (GWG), the goal of which is to identify genetic variants that predispose to aggressive prostate cancer. Recent genome-wide association studies have identified more than 80 genetic variants that are associated with prostate cancer susceptibility, and the GWG is currently analyzing the DNA of prostate cancer patients to determine the associations between these genetic variants and prostate cancer aggressiveness.

We are also collaborating and sharing biological samples with 13 institutions across North America with ongoing active surveillance (AS) protocols to determine whether previously identified genetic variants that have been associated with aggressive prostate cancer in men undergoing radical prostatectomy can also predict prognosis in men enrolled in AS.

Patients are being actively recruited for these studies, and the results will help us develop a panel of genetic biomarkers that can be used to guide treatment decisions for men with prostate cancer.

Genotyping Laboratory

Investigator: S. Lilly Zheng, MD

Summary: Our genotyping laboratory focuses on the discovery of germ line and somatic genetic variations that are associated with cancer risk and progression as well as clinical translation of genomic discoveries. Our goal is to develop and optimize genomic tests that are accurate, simple and cost-effective. An important component of our research is collaboration with licensed specialists in a CLIA-certified laboratory and physicians to develop and implement clinically useful genomic tests using the ACCE (Analytical validity, Clinical validity, Clinical utility and ELSI (ethical, legal and social implications) model.

Metabolic Analysis of Fat Surrounding Prostate Tumors and Normal Prostate Tissue in Obese and Non-Obese Patients

Investigators: Kristian Novakovic, MD, Alice Wrywicz, P.N. Venkatasubramanian, PhD, and Charles Brendler, MD (in collaboration with Jennifer Doll, Medical College of Wisconsin, Susan Crawford, DO, and Philip Fitchey, St. Louis University)

Summary: Recent clinical evidence suggests that the thickness of the periprostatic fat surrounding the prostate may be related to prostate cancer aggressiveness. We hypothesize that the composition of periluminal fat may play a role in promoting cancer invasion and are analyzing periprostatic fat from men with and without prostate cancer using MR imaging and spectroscopy as well as various bioassays to discover unique metabolites made by the fat surrounding the prostate. Our study thus far has revealed that unique metabolic signatures are associated with periprostatic fat in aggressive prostate cancers. Adipose-associated metabolites that are determined to promote tumor cell proliferation may enhance our understanding of the mechanism by which fat stimulates prostate cancer progression, and these metabolites may have the potential to serve as prognostic biomarkers or targets for novel therapeutic interventions.

Fat and Its Relationship to Prostate, Bladder and Kidney Cancer

Investigators: Kristian Novakovic, MD, Robert Silvers, MD, Jacqueline Petkewicz, MA, Margo Quinn, MS

Summary: The association between obesity and cancer is of growing interest. Past studies have shown that increased waist circumference is associated with a 1.37 fold higher risk of death from cancer. In urological cancers, research has shown that obesity is associated with an increased risk of prostate cancer, bladder cancer and kidney cancer. In addition, studies have indicated that increased body fat also corresponds to poor pathological outcomes for these patients.

We hypothesize that intra-abdominal fat plays a significant role in the development and progression of urologic malignancy and that methods, such as measurement of peri-renal fat volume, to easily quantify the intra-abdominal fat content will be useful in cancer risk stratification. In addition, those methods could provide a valuable tool to track progress with lifestyle modifications that may impact cancer outcome and are an important part of a personalized cancer treatment strategy. We may also identify metabolic and hormonal factors that are associated with larger volumes of intra-abdominal fat. Ultimately, precise molecular characterization of the fat-cancer interaction may provide new prognostic markers and therapeutic targets for urological and other malignancies.

Urological Outcomes Research

Decision Analysis and Cost Effectiveness in Urological Disease

Investigator: Sangtae Park, MD, MPH

Summary: The Affordable Care Act mandates that healthcare institutions deliver more value per healthcare dollar spent—namely, to provide higher quality care at lower costs. This will be enforced by rewarding institutions that meet these challenges, while penalizing those that continue to deliver low-quality care. Cost effectiveness analysis is a powerful decision analytic technique that integrates cost of care with evidence-based medicine to arrive at the most cost-effective strategy for care in a given clinical situation. This technique can be used by institutions to develop healthcare policies to maximize quality of outcomes while minimizing costs.

My collaborators and I have already demonstrated the most cost-effective means for treating renal stones during pregnancy and the most cost-effective method for treating incidentally discovered small kidney tumors. We aim to expand these analyses to prostate cancer, bladder cancer and benign prostate hyperplasia.
2014 Achievements in Education

The NorthShore Department of Surgery is focused on being a leader in surgical education. We provide the highest quality education to our trainees, but also seek to advance the field of surgical education through curriculum development, educational scholarship, and local, regional and national leadership in medical and surgical education. In 2014, we celebrated the fifth year of our teaching affiliation with The University of Chicago Pritzker School of Medicine. Our commitment to University of Chicago learners remains a key mission for the Department. A record number of faculty members received teaching awards and honors this year.

2014 University of Chicago Appointments and Promotions

- Promotion to Clinical Associate Professor: Michael Ujiki, MD
- Appointments as Clinical Assistant Professor: William Myers, MD, Milap Mehta, MD

New Local Leadership Positions in Education

- Stephen Haggerty, MD, Associate Program Director of General Surgery Program
- Michael Howard, MD, Associate Program Director of Plastic Surgery Program
- Nancy Schindler, MD, MHPE, was invested as the E. Stephen Kurtides, MD, Chair of Medical Education at NorthShore University HealthSystem

Leadership in Education

Dr. Schindler traveled with colleagues from the University of Chicago to Beijing, China. Supported by a grant, Dr. Schindler and colleagues collaborated with Peking Union Medical College Hospital to host a national symposium on residency training.

Dr. Schindler was named Chair of the Graduate Surgical Education Committee for the Association for Surgical Education and will serve a second term on the Board of Directors.

Dr. Schindler was selected as a mentor for the Association for Surgical Education (ASE) Surgical Education Research Fellowship.

Departmental Awards and Honors

University of Chicago Excellence in Teaching Awards

- Ermilo Barrera, MD
- NavYash Gupta, MD
- Stephen Haggerty, MD
- Benjamin Lind, MD
- John Linn, MD
- Omar Morcos, MD
- James Spitz, MD
- Mark Talamonti, MD
- Michael Ujiki, MD
- David J. Winchester, MD
- Katharine Yao, MD

Dr. Ujiki received the Association for Surgical Education Philip J. Wolfson Outstanding Teacher Award and the Rosalind Franklin Physicians Clinical Assistant Preceptor of the Year Award.

Departmental Awards and Honors (continued)

Manvi Maker, MD, completed the Medical Education Research, Innovation, Teaching and Scholarship (MERITS) fellowship at the University of Chicago.

Dr. Schindler was honored for a second term as a Fellow of the Academy of Distinguished Medical Educators at the University of Chicago.

Selected Presentations

Schindler N, Miller M. “Development and Evaluation of a Systems-Based Practice Curriculum for Surgery Residents: Analysis of Junior Resident Systems-Based Practice Blogs.” Chosen as Plenary presentation for Medical Education Day, University of Chicago Pritzker School of Medicine, November 2014.


New Educational Programs and Initiatives

- Microsurgery instructional course
- Gastroenterology rotation for surgery residents
- Continued expansion of surgical skills simulation
- Mock oral exams held for general surgery
- Surgical skills boot camp held for interns at the Grainger Center for Simulation and Innovation (GCSI)
- Departmentwide faculty mentoring initiative
Division of Cardiac Surgery

Clinical Program Highlights

Transcatheter Aortic Valve Replacement (TAVR): In concert with the Division of Cardiology, the Division of Cardiac Surgery has established one of the most active TAVR programs in Illinois. Our multidisciplinary program has treated patients from Illinois, Wisconsin, Indiana and Michigan. We are able to offer medically complex patients with aortic stenosis a least-invasive approach to valve replacement.

Thoracic Aorta Program: In concert with the Division of Vascular Surgery, the Division of Cardiac Surgery offers patients with complex aortic arch aneurysms and intra-thoracic aortic dissections advanced hybrid approaches to treat their conditions, including aortic arch debranching and stent-grafting and complete off-pump surgical correction of aortic pathology.

NorthShore Cardiovascular Institute: After years of planning, NorthShore launched the Cardiovascular Institute this year. The Division of Cardiac Surgery plays a key role in offering surgical expertise in the areas of valvular heart disease, structural heart disease, myocardial revascularization, arrhythmia surgery and the surgical treatment of aortic diseases.

Division Growth

The Division of Cardiac Surgery has experienced significant growth in our clinical program, with an increase in procedure volume of more than 23 percent this past year. The complexity of our cardiac surgical patients also continues to increase, including a greater number of reoperative cardiac surgery operations, more multi-heart valve repair and replacement procedures, and an increasing number of complex aortic operations.

Clinical Innovations and Research Highlights

REPRISE III Trial: REpositionable Percutaneous Replacement of Stenotic Aortic Valve though Implantation of the Lotus Valve System. NorthShore is one of the few U.S. sites to study the next generation of repositionable, stent-mounted aortic valves for transcatheter aortic valve replacement (TAVR). NorthShore was also the site of the first-ever human implantation of a Lotus Valve stent-mounted aortic valve in the United States.

Selective Cerebral Cooling During Cardiopulmonary Bypass: NorthShore is the primary study site to determine the feasibility and safety of the application of external hypothermia during elective cardiac surgery using the Welkins EMT/ICU Temperature Management System. It is hoped that selective head cooling will yield improved cerebral protection for patients undergoing heart surgery requiring extracorporeal circulation.

EXCEL Trial: The Division is also partnering with our colleagues in the Division of Cardiology to participate in the EXCEL Trial. This global, prospective, multi-center, randomized trial assesses the safety and efficacy of coronary artery bypass grafting (CABG) versus the XIENCE PRIME/XIENCE V Everolimus Eluting Coronary Stent Systems in select patients with unprotected left main coronary artery stenosis. The goal of the study is to determine the best possible revascularization strategy in patients with left main coronary artery stenosis, and to evaluate XIENCE as a potential new treatment option for select patients with this high-risk condition.

Teaching and Educational Highlights

Training the Next Generation of Heart Surgeons: In concert with the Division of Thoracic Surgery, the Division of Cardiac Surgery has joined with the University of Chicago Pritzker School of Medicine to serve as a clinical teaching site for the University of Chicago residency program in cardiac and thoracic surgery that has been accredited by the Accreditation Council for Graduate Medical Education (ACGME).
Clinical Program Highlights
The Division of General Surgery includes seven surgeons providing comprehensive surgical services at all four NorthShore Hospitals. This includes general surgery as well as areas of expertise in bariatric, colorectal, foregut and minimally invasive surgery. The Division offers eight outpatient sites to provide improved geographic access in Lake and Cook counties.

Clinical Innovations and Research Highlights
The Division manages prospective databases for bariatric, hernia, colorectal and foregut surgery, monitoring outcomes and patient quality of life. In addition, the Division has been actively involved in various clinical research projects including:

- A randomized double-blinded, parallel-group, multicenter clinical trial using an endoscopic suturing device for primary weight loss; and
- A Phase II/III trial of neoadjuvant FOLFOX with selective use of combined modality chemoradiation versus preoperative combined modality chemoradiation for locally advanced rectal cancer patients undergoing low anterior resection with total mesorectal excision

Division members had 13 peer-reviewed publications in the past year.

Teaching and Educational Highlights
- John Linn, MD; Stephen Haggerty, MD; James Spitz, MD; and Michael Ujiki, MD, each received an Excellence in Teaching Award from the University of Chicago Department of Surgery.
- Dr. Ujiki is the Surgical Director of the 13,000-square-foot Grainger Center for Simulation and Innovation (GCSI). In 2014, more than 100 courses were conducted with more than 1,000 participants ranging from medical students to attending surgeons from across the country and beyond.
- The weekly General Surgery Division research meeting and monthly Minimally Invasive Surgery journal club are approved for Continuing Medical Education (CME) credit through the University of Chicago.

Honors, Awards and Academic Recognition
Dr. Ujiki was awarded $5 million from The Grainger Foundation to expand the Grainger Center for Simulation and Innovation (GCSI). At its annual gala in June 2014, The Auxiliary of NorthShore University HealthSystem also awarded the proceeds to the GCSI and Dr. Ujiki (co-principal investigator). The funding will be used to continually improve healthcare through medical and surgical simulation.

Division Surgeons
Woody Denham, MD
Division Chief
Stephen Haggerty, MD
John Linn, MD
Barbara Loris, MD
Joseph Muldoon, MD
James Spitz, MD
Michael Ujiki, MD

For more information, visit northshore.org/general-surgery

Dr. Joseph Muldoon participates in advanced education of students and residents at the Grainger Center for Simulation and Innovation (GCSI) at NorthShore Evanston Hospital.
Division of Ophthalmology

New Faculty
Rebekah Braslow, MD
Dr. Braslow joined our practice in October 2014 from Jesse Brown VA Medical Center in Chicago. She is a comprehensive ophthalmologist and sees patients in our Vernon Hills and Gurnee offices.

Division Growth The Division of Ophthalmology continues to see remarkable patient volume growth—a 20 percent increase in 2014 as compared to 2013. Patient access and utilization in Lake County have improved with the addition of offices in Gurnee and Vernon Hills. The Division of Ophthalmology now includes 14 ophthalmologists, two optometrists and a new optical shop located in the atrium of NorthShore Glenbrook Hospital. The Ophthalmology Center in the Ambulatory Care Center on the NorthShore Skokie Hospital campus has reached capacity with expansion slated for 2015.

Honors, Awards and Academic Recognition
Marian Macsai, MD—President-Elect of the Cornea Society
Manvi Maker, MD—Completed the Medical Education Research, Innovation, Teaching and Scholarship (MERITS) fellowship at University of Chicago
Manvi Maker, MD—Elected Councilor, Chicago Ophthalmological Society
Milap Mehta, MD—Best Paper and 2nd Place on his thesis at American Academy of Ophthalmology
NorthShore Ophthalmology Department featured in Chicago magazine Top Doctors issue.

Clinical Innovations and Research Highlights
The Cataract Surgery Structured Clinical Documentation System (SCDS) will be implemented in Epic in early 2015. The SCDS will improve cataract surgery workflow and enable accurate tracking of patient outcomes and residents’ surgical progress.

Selected Presentations
Marian Macsai, MD—Cornea Surgery Begins in the Eye Bank, Asian Cornea Society, Taipei, Taiwan, December 2014

for dry eye syndrome. Dry eye syndrome affects millions of people each year, and many are unable to find relief with conventional treatments.

Marian Macsai, MD, was appointed to the Advisory Committee on Blood and Tissue Safety and Availability that advised the U.S. Food and Drug Administration and the Office of the Secretary of Health and Human Services.

Teaching and Educational Highlights
Microsurgery on the eye of a patient who is under conscious sedation requires a unique skill set of hand and eye coordination. Dr. Manvi Maker and William Myers, MD, are developing a new Surgical Ophthalmic Skills Training Course for resident education on these crucial techniques. The course will train University of Chicago ophthalmology residents and will be held at the Grainger Center for Simulation and Innovation.

Selected Courses
Marian Macsai, MD—Course Director, Microsurgical Suturing Techniques and Instructor at the American Academy of Ophthalmology Annual Meeting in New Orleans, LA, 2014

For more information, visit northshore.org/ophthalmology
**Division of Otolaryngology**

**Clinical Program Highlights**

For the third year in a row, NorthShore’s Division of Otolaryngology–Head and Neck Surgery has been ranked as high-performing in the 2014 U.S. News & World Report rankings.

**Division Growth** The Division had an outstanding year of ongoing growth and expansion of clinical, research and educational programming in each of our sections. This growth has led also to expansion of multidisciplinary teams to manage complex patients including Allergy/Sinus, Skull Base, Head and Neck Oncology, Professional Voice, Sleep Surgery, Adult and Pediatric Hearing Loss/Deafness, Cochlear Implantation, Pediatric Airway Voice Resonance and Swallowing, and Cleft/Craniofacial and Endocrine Surgery. Additional capacity for general otolaryngology care has been added at the Skokie Hospital and Vernon Hills campuses.

The newest program involves development of a sleep surgical team led by Jonathan Pomerantz, MD, and Mihir Bhayani, MD, who in collaboration with NorthShore Sleep Medicine now offer surgical management options for obstructive sleep apnea patients.

**Clinical Innovations and Research Highlights**

As part of our new Sleep Surgery Program, NorthShore became the first health system in Illinois to offer obstructive sleep apnea patients a new, minimally invasive surgical technique to ease their condition with upper airway stimulation. The procedure, which was recently approved by the FDA, involves implantation of a hypoglossal nerve stimulation system. When the device is activated, it works by sensing the breathing cycle and delivering stimulation during inhalation to key muscles that help keep the airway open during sleep. Unlike a CPAP system, it does not require a mask and there is no oral appliance.

**Teaching and Educational Highlights**

Since 2011, there has been a full-time rotation of fourth- or fifth-year otolaryngology, head and neck surgery (Oto-HNS) residents from the University of Illinois in the Division. In 2014, the educational program expanded to include two three-month blocks for each of the fourth-year Oto-HNS residents from the University of Chicago. Thanks to consistently positive feedback on the rotation, these new residents will complete six-month blocks here starting in 2015.

The 5th Annual Chicago Resident Sinus Course, organized by Joseph Raviv, MD, took place in the Grainger Center for Simulation and Innovation (GCSI) Jan. 19, 2014. Thirty-one residents attended from five different programs including Medical College of Wisconsin, Loyola University, University of Chicago, Northwestern University and University of Illinois. Michael Shinners, MD, organized the annual resident temporal bone course also held in the GCSI July 12, 2014. This well-attended program included residents from the University of Chicago and the University of Illinois. Participant feedback for both programs was uniformly very positive.

**Honors, Awards and Academic Recognition**

In August 2014, Dr. Pomerantz was awarded a Loyalty Leader Award for his work on the NorthShore Physician Mentoring Committee. Dr. Pomerantz was also recently accepted into the NorthShore Quality and Safety Fellowship Program.

**Selected Presentations**


Friedman AD. Care of the Performing Voice: A Laryngologist’s Perspective. Invited lecturer at Northwestern University, Bienen School of Music, July 2014, Evanston, IL.
Clinical Program Highlights
The Division of Plastic and Reconstructive Surgery has a robust presence in the medical community locally and in the world. This year, Division Chief Bruce Bauer, MD, has traveled the East Coast and to the United Kingdom to educate physicians about the surgical treatment of congenital nevi, microtia and pediatric tissue expansion.

Clinically, our physicians continue to pioneer. Dr. Bauer and Sara Dickie, MD, are highly sought for their expertise in staged nevus excision, ear reconstruction and treatment of cleft palate. Mark Sisco, MD, and Jeremy Warner, MD, are bringing smiles to the faces of new facial reanimation patients. Michael Howard, MD, has been getting rid of the pain of chronic migraines and breast reconstruction with new surgical and treatment modalities.

Clinical Innovations and Research Highlights
• Our nevus tissue bank, supplied by patients of Dr. Bauer and Dr. Dickie and housed at Children’s Hospital of Pittsburgh, has been actively publishing and expanding the knowledge of genetic markers in congenital melanocytic nevus (CMN) development.
• New drug-delivery technology implemented by Dr. Howard has demonstrated shorter hospital stays and lower postoperative pain for breast reconstruction patients.
• Dr. Sisco’s research into aging and breast reconstruction has shown that women of advanced age experience a positive psychosocial benefit from breast reconstruction—one that is comparable to younger women.

The nevus tissue bank has been renamed and is now called The Gavin Bailey Tissue Repository for Neural Crest Disorders in honor of a young patient who died of the neural disease that can result from CMN.

Honors, Awards and Academic Recognition
Dr. Bauer was listed as one of America’s Top Doctors by Castle Connolly and also by Chicago magazine.

Dr. Sisco gave a formal course on nipple-sparing mastectomy at the 2014 American Society of Plastic Surgeons Annual Meeting. Division physicians presented scientific posters at several national meetings and published more than 10 original journal articles and book chapters. Additionally, our pediatric nursing team presented a talk on pediatric telemedicine at a national nursing conference.

Other Accomplishments
Dr. Howard received a $5,000 grant to fund the Microsurgery Skills Course he directs for residents, while Dr. Warner was awarded $4,000 in grants to support the annual Rhinoplasty Symposium he directs.

Dr. Sisco received $33,000 from NorthShore’s Breast and Ovarian Research Program to study the psychosocial impact of contralateral reconstruction in breast cancer patients.
Clinical Program Highlights

The Division of Surgical Oncology offers comprehensive surgical oncology care, with expertise in breast, endocrine, gastrointestinal, hepatobiliary, pancreas, melanoma and sarcoma. Since 1981, NorthShore has been a Commission on Cancer (COC) Accredited Cancer Program.

After 26 years of dedicated service, Jose Velasco, MD, will retire from clinical practice. He provided leadership and mentoring as the Chairman of Surgery at Skokie Hospital for 25 years and served as President of the Chicago Surgical Society in 2014.

New Faculty

In September, Lawrence Krause, MD, joined the Division of Surgical Oncology, bringing his expertise in breast cancer. Dr. Krause completed his surgical residency at Michael Reese Hospital and remained on staff there until 2001. He has been on staff at NorthShore Highland Park Hospital since 1996.

Division Growth

The Division has established a High-Risk Breast Program, funded through a generous philanthropic grant from the North Suburban Healthcare Foundation, that offers comprehensive screening, risk assessment and lifestyle modifications for women at increased risk for developing breast cancer.

Clinical Innovations and Research Highlights

The Division of Surgical Oncology published 28 peer-reviewed papers and book chapters in 2014.

Teaching and Educational Highlights

One of the strongest commitments of the Division is to provide high-quality education and mentoring for medical students, residents and fellows. The 2014 Surgery Excellence in Teaching Awards of the University of Chicago were presented to 11 NorthShore faculty this year. Four of these recipients were members of the Division of Surgical Oncology, including Ermilo Barrera, MD, Mark Talamonti, MD, David J. Winchester, MD, and Katharine Yao, MD.

Honors, Awards and Academic Recognition

NorthShore has a long tradition of leadership and productivity in academic medicine. The Division of Surgical Oncology continues to maintain a strong presence at national meetings as well as producing high-impact publications (see page 20).

At the 2014 annual meeting of the Society of Surgical Oncology, Dr. Talamonti and Dr. Winchester moderated sessions on Neoadjuvant Therapy for Pancreatic Cancer, Surgical Directed Tumor Ablation and Breast Cancer Extremes of Age. In April, Richard Prinz, MD, was senior author for a podium presentation at the American Association of Endocrine Surgeons, addressing Tumor Markers for Predicting Nonfunctioning Pancreatic Neuroendocrine Tumor Outcome. At the Annual Clinical Congress of the American College of Surgeons, Tricia Moo-Young, MD, addressed the Metastatic Lymph Node Ratio in Medullary Thyroid Cancer, and Dr. Winchester moderated sessions on Conducting Clinical Research and Controversies in Surgical Oncology. Dr. Winchester was the senior author of a podium presentation at the American Thyroid Association, addressing the Survival Advantage of Radioactive Iodine Ablation for Papillary Thyroid Cancer.

Finally, the Division had three podium presentations at the 2014 annual meeting of the Western Surgical Association, authored by Marshall Baker, MD, Catherine Pesce, MD, Dr. Prinz, Dr. Talamonti, Dr. Velasco, Dr. Winchester and Dr. Yao, addressing Axillary Surgery for Early Breast Cancer, Early National Experience with Laparoscopic Pancreatoduodenectomy and Variation in Bilateral Mastectomy Rates.
Clinical Program Highlights

New Faculty Seth Krantz, MD, will join our faculty in the summer of 2015. Dr. Krantz received his MD and completed surgical residency at Northwestern University Feinberg School of Medicine, and he is currently completing a fellowship in cardiothoracic surgery at Washington University School of Medicine. His specialty interests include thoracic surgical oncology and outcomes research.

Division Growth In 2014, the Division of Thoracic Surgery experienced an 18 percent growth in clinical volume.

Clinical Innovations and Research Highlights

Thoracic Oncology Program: Led by co-directors John Howington, MD, and medical oncologist Thomas Hensing, MD, our multispecialty team meets weekly to discuss individual patient cases, bringing collective expertise to the development of personalized treatment plans. The program and patients are supported by our shared Nurse Navigator Gail Ronkoske, BSN, OCN. The thoracic research teams also meet weekly to review local and national clinical trials as well as investigator-initiated studies.

ProvenCare® Lung Cancer Initiative: The NorthShore Thoracic Surgery team is participating in The ProvenCare® Lung Cancer Collaborative, co-sponsored by Geisinger Health System and the American College of Surgeons Commission on Cancer. This is a multi-institutional initiative that focuses on an evidence-based best practice care approach to the surgical treatment of lung cancer patients. More than 250 NorthShore patients have been entered into the study.

Illinois Surgical Quality Improvement Collaborative: Dr. Howington was selected as the Surgeon Champion for NorthShore in the collaborative. The collaborative consists of more than 40 leading Illinois hospitals working together to improve quality and safety of surgical care, while also lowering costs of care. The objective is to obtain rapid, meaningful and sustained improvement in surgical quality by facilitating engagement in mentored and targeted Quality Improvement and Performance Improvement initiatives.

Thoracic Tumor Data Registry and Biorepository: The registry and biorepository currently include clinical data and tissue samples from more than 960 patients with thoracic tumors. NorthShore is collaborating with the University of Chicago and West Virginia University on two different studies:
- Tarceva Study: In collaboration with the University of Chicago, our thoracic biorepository databases were analyzed for clinical outcomes in lung cancer patients treated with Tarceva. The results will be used for predictive treatment modeling.
- Non-Small Cell Lung Cancer Pilot Study: Fifty non-small cell lung cancer tissue samples were processed and sent to West Virginia University. A seven-gene prognostic and predictive model was tested, which showed significant risk stratification in the patient cohort. This pilot study was completed in 2014, and a larger cohort of 100 samples will be analyzed in 2015.

Structured Clinical Documentation System (SCDS): After successfully implementing an SCDS clinical note, the thoracic team is currently working with the SCDS team to develop a structured operative note.

Teaching and Educational Highlights

The Division of Thoracic Surgery, collaborating with the University of Chicago Thoracic Surgery Residency Program, helped train fellows Zewditu Asfaw, MD, and Diego Avella Patino, MD. The Thoracic Surgery program is involved in the education of Physician Assistant students from Rush University Medical Center and Rosalind Franklin University with the assistance of our two dedicated Thoracic Surgery Physician Assistants Amy Call, PA-C, and Kaitlin Jensen, PA-C.

Our two summer research interns from premedical undergraduate programs at Loyola University Chicago and the University of Illinois presented individual research projects at our Thoracic Oncology Research Conference. Amanda Misch presented “An Analysis of the Results of Thoracoscopic vs. Open Lobectomies and Segmentectomies for Lung Cancer Patients,” and Meghan Vallee presented “Determining the Role of Vascular Invasive, Lymph Node Involvement and Lymphatic Invasion as Predictive Factors for Recurrence of Non-Small Cell Lung Cancer.” This summer internship and our research efforts are well supported by our dedicated Thoracic Oncology Research Coordinator Ujala Bokhary, MBBS, CCRP.

Honors, Awards and Academic Recognition

Dr. Howington was elected as a member of the University of Chicago Thoracic Residency Clinical Competency Committee and the American Association of Thoracic Surgeons Robotics Fellowship Review Committee. He was also selected as a member of the Illinois Surgical Quality Improvement Collaborative Advisory Committee.

Selected Presentations

Pulmonary Metastasectomy Presentation at the 17th Annual Meeting of the Association of Physician Assistants for Oncology, Austin, TX, September 2014.


Clinical Program Highlights

The Division of Trauma/Acute Care Surgery/Surgical Critical Care was established in February 2012 to provide prompt emergent care for critically ill surgical patients in order to improve clinical outcomes. NorthShore has four Trauma Centers. The Level 1 Trauma Center at NorthShore Evanston Hospital has a trauma surgeon immediately available at all times for patients arriving in the Emergency Department. Evanston Hospital also has an operating room and staff available within minutes of patient arrival. The Level 1 designation also ensures that required critical care specialists are available within one hour.

Glenbrook, Skokie and Highland Park Hospitals are designated as Level 2 Trauma Centers, meaning a trauma surgeon is available within 30 minutes. Evanston Hospital serves as a resource for these Level 2 Centers. If patients require a higher level of care, the Evanston trauma team helps coordinate a safe and prompt transfer to its Level 1 Center.

All Division physicians are board-certified with Andrew Agos, MD, and Carlos Ortega, MD, having additional board certification in surgical critical care. The Division’s Trauma Nurse Coordinator is Jacque Quick, RN.

Clinical Innovations and Research Highlights

The Division works closely with colleagues in the Emergency Department, the Intensive Care Unit (ICU) and the operating room to provide expert surgical care. Trauma surgeons care for surgical emergencies such as hemorrhages, airway issues and central venous access that occur in the hospital. The Division also has the ability to care for pediatric patients with traumatic injuries and provide surgical care for children ages 5 and older. As in years past, we are continually involved in injury prevention and education in our communities.

We continue to collaborate with biomedical engineering students from Northwestern University in conjunction with the Grainger Center for Simulation and Innovation (GCSI) at Evanston Hospital. Working together, we are developing innovative products to be used in trauma and acute care surgery. Our goal is to develop working prototypes that can be submitted for Internal Review Board approval and subsequently tested at our NorthShore Hospitals.

Honors, Awards and Academic Recognition

A case report on nonoperative management of pancreatic injuries has been submitted to the Journal of Trauma for publication. Dr. Agos is contributing to a book chapter in the Atlas of Clinical Emergency Medicine on cervical and lumbar spine fractures. We are collecting data with colleagues in Neurosurgery on bicycle injuries and expect to co-author a publication in the coming year.

Our trauma nurse coordinators received the Journal of Trauma Nursing Writing Excellence Award in the category of Most Accessed Online Article for 2014 for their manuscript titled “Glasgow Coma Scale: How to Improve and Enhance Documentation.” This year, they had a poster presentation at the Advocate Injury Institute Symposium, Park Ridge, IL, titled “Traumatic Pain: Assessment and Management.”

Dr. James Boffa leads the Trauma Division, which works collaboratively with Emergency Department, Intensive Care Unit and Operating Room colleagues to provide expert surgical care for patients with surgical emergencies.
Division of Urology

Clinical Program Highlights
New Faculty The Division of Urology added a dedicated nutritionist, Emmaline Rasmussen, who is particularly interested in the relationship of nutrition and obesity to cancer development and progression. She will also dedicate her talents to other areas of urology in which nutrition plays an important role, including kidney stone disease and sexual health.

Division Growth Outstanding patient service and loyalty at the Glenbrook Hospital John and Carol Walter Center for Urological Health was reflected in a 75 percent increase in new patient visits and a 98 percent increase in established patient visits over the past year.

Clinical Innovations and Research Highlights
Cancer Nurse Navigator: Martha McCurdy, RN, BSN, meets with and counsels cancer patients pre- and postoperatively, and visits them while they are hospitalized.

Cancer Genetics Testing: All urological cancer patients are now offered genetics tests, several of which are unique to NorthShore, to risk-stratify their cancers and personalize their care.

Prostate Cancer Imaging: Division Chief Michael McGuire, MD, in close collaboration with NorthShore Radiologist Robert Silvers, MD, now routinely images and biopsies the prostate with both transrectal ultrasonography and magnetic resonance imaging. This combined technology has improved diagnostic accuracy and has attracted patients from across the Midwest.

Program for Personalized Cancer Care: The Division of Urology has recruited several internationally recognized scientists to the Department of Surgery to lead the new Program for Personalized Cancer Care (see page 1), including cancer genomicists from Wake Forest University, cancer biologists from Vanderbilt University, and the return of Susan Crawford, DO, from St. Louis University as our dedicated research pathologist. These new scientists complement our computational medicine and bioinformatics team directed by Yuan Ji, PhD, and our biostatistical team directed by Chi-Hsiung Wang, PhD.

Teaching and Education Highlights
Patient Education: The prostate cancer online shared-decision educational module introduced last year has proved helpful to patients, improving their understanding and satisfaction with their treatment plan. Two new modules—benign prostatic hyperplasia (BPH) and kidney stone disease—were introduced this year, and several additional modules including kidney cancer and urinary incontinence will soon be added.

Community Education: Our program to provide improved education and care to traditionally underserved African American and Latino patients expanded over the past year, and several well-attended church symposia were held under the leadership of Director of Community Outreach Rudy Lombard, PhD. Dr. Lombard unfortunately died in December after a courageous battle with pancreatic cancer. This program will continue, now named in his honor.

Honors, Awards and Academic Recognition
For the fourth consecutive year, the Division of Urology was recognized by U.S. News & World Report as one of the top 100 high-performing urology programs in the country. Our abstract resulting from NorthShore’s participation in an international study of the impact of breast cancer mutations on prostate cancer risk was recognized with a Merit Award at the 2014 meeting of the American Society of Clinical Oncologists (ASCO).

Presentations: At the 2014 annual meeting of the American Urological Association (AUA), the NorthShore Division of Urology gave nine presentations and has submitted an additional 16 abstracts for presentation at the 2015 annual meeting. At the 2014 annual meeting of the North Central Section of the AUA, our team gave eight presentations.

Publications: In 2014, the Division of Urology published 19 peer-reviewed manuscripts with an additional 12 in press and another 35 either submitted or in preparation.

Grants: In addition to several institutional pilot grants, Brian Helfand, MD, PhD, is the NorthShore principal investigator on a National Institutes of Health (NIH) multi-institutional BPH (benign prostatic hyperplasia) grant. Seven external grant applications were submitted, including a $2 million grant evaluating the impact of new genetic testing on quality of life in men undergoing prostate cancer screening and diagnosis. These grants total $7 million in funding, and our new scientists will be bringing with them five additional external grants totaling $2.5 million.
Clinical Program Highlights
The Division of Vascular Surgery has joined the Vascular Quality Initiative, a national database that allows our surgeons to track outcomes and focus on quality improvement.

New Faculty
The Division is working closely with the Department of Medicine to jointly recruit a vascular medicine physician. Vascular medicine specialists are medical physicians who treat diseases of the vascular system such as Raynaud’s disease, chronic venous insufficiency and lymphedema that do not require endovascular or surgical therapy.

Division Growth
The Division includes six vascular surgeons providing comprehensive vascular surgery services at all four NorthShore Hospitals. The Division recently moved into its new clinic space at the Skokie Hospital Ambulatory Care Center (ACC) as a component of the new NorthShore Cardiovascular Institute.

Clinical Innovations and Research Highlights
The Division of Vascular Surgery is participating in three new clinical trials:
• A multi-center trial comparing efficacy and safety of a new topical hemostatic agent for treatment of needle hole bleeding in vascular surgery
• A multi-center trial comparing the Lutonix drug-coated balloon to standard balloon angioplasty for treatment of femoropopliteal in-stent restenosis
• A multi-center trial to evaluate the effectiveness of Cutimed Sorbact dressings plus Jobst UlcerCare compression for the management of venous leg ulcers

Teaching and Educational Highlights
Drs. Omar Morcos, Nancy Schindler, Benjamin Lind, Tina Desai, and NavYash Gupta participate in the 2104 Open Surgical Skills Course at Evanston Hospital.

Honors, Awards and Academic Recognition
Dr. Nancy Schindler was named the NorthShore E. Stephen Kurtides, MD, Chair of Medical Education. Dr. Schindler also joined the Northshore Diversity and Inclusion Physician Leadership Steering Council and the NorthShore Medical Group Awards Committee, and she was named the Co-Leader of the Education Strategy Group for the University of Chicago Department of Surgery.

Dr. Benjamin Lind was named the Director of the NorthShore Medical Group Tissue Program.

Dr. NavYash Gupta was an Invited Moderator/Faculty at the 3rd Annual Indovasc Symposium, “Interactive Case Presentations: Rapid Fire Face-Offs,” and the “Endovascular Course for Advanced Specialty Trainees” in Bangalore, India.

Joseph Caprini, MD, was invited to speak at numerous national and international venues on topics related to venous thromboembolism and anticoagulation.

Charles Briggs, MD, Vascular Surgery Fellow, was awarded Best Presentation by a Fellow at the Annual Meeting of the South Asian American Vascular Society (SAAVS). The abstract, co-authored by Drs. Gupta and Desai and Karen Hynes (Clinical Research Associate), described the “Worldwide Incidence of Anaphylactic Reaction Related to Polymer Leak with the Ovation Abdominal Stent Graft System.”

Other Accomplishments
Dr. NavYash Gupta in collaboration with colleagues from Loyola University Chicago, Rush Medical College, the University of Chicago and the University of Illinois Medical Center formed the Chicago Vascular Consortium. Dr. Gupta was one of the organizers for the group’s First Annual Vascular Surgery Fellows Dine and Debate. Omar Morcos, MD, was an Invited Moderator for the Fall 2014 inaugural event, which is now being planned as a semiannual gathering with expansion to include fellows and faculty from throughout the Midwest region.
Your Contributions to Team Science and Personalized Medicine

Thanks to the sustaining support of many donors—including grateful patients, foundations and corporate partners—the physician-researchers of the NorthShore Department of Surgery have made 2014 a new and successful chapter in the team science of personalized medicine. Collaborating through the Grainger Center for Simulation and Innovation (GCSI), renamed in honor of a multiyear pledge from The Grainger Foundation, we have further advanced the exploration of surgical simulation, delivering safer and more successful operations and shorter recoveries and return to normal life for our patients.

Teaming up with the informaticians at NorthShore’s Center for Biomedical Research and Informatics (CBRI), we have aggregated and analyzed hundreds of patient electronic records of related past surgeries to refine and improve future operations. We have had the great fortune to hire an internationally known team of experts in genomic medicine, cancer biology, cancer pathology and computational medicine who will be developing new insights into the molecular basis of cancer and targeted cancer care. Through the new Program for Personalized Cancer Care (PPCC), these innovations will match each patient’s health history and cancer profile to networked NorthShore records as well as national cancer databanks and biobanks, enabling surgeons to create customized treatment plans best matched to the individual patient’s needs.

We thank all of you for your generous donations that have covered the added costs of developing the interdisciplinary medicine and individualized surgical science that is bringing together our talented surgeons and scientists with other experts on the NorthShore team to create the best model of care for each patient. We appreciate your support of team science, and we are grateful to all the generous individuals, community-minded foundations and committed corporations who have positively contributed to our success in 2014.

For more information, visit northshore.org/foundation

2014 Peer-Reviewed Publications and Book Chapters

General Surgery


For more information, visit northshore.org/foundation
2014 Peer-Reviewed Publications and Book Chapters (continued)

Hayman AV, Stocker SJ, Baker MS, Bentrem DJ, Prinz RA.


Thoracic Surgery


Urology


Albaugh JA. Small study finds that 3 years after prostate cancer treatment, men may report high quality of life and functioning, Evid Based Nurs. 2014 Apr;17(2):42-43.


Helfand B. Loeb S, Roehl KA, Reinhardt D, Cooper PR, Hu Q, Catalona WJ. A rare genetic variant on chromosome 8q24 that confers a significantly greater risk of prostate cancer. BJU Int. In press.


**Cardiac Surgery**

*Division Chief*

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**General Surgery**

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Comprehensive Ophthalmology and Complex Cataract Surgery

John Pula, MD  
(224) 251-2020  
Neuro-Ophthalmology

Peter Rabiah, MD  
(224) 251-2020  
Comprehensive Pediatric Ophthalmology, Uveitis, Adult Strabismus

Scott Rosen, MD  
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Pediatrics and Comprehensive Ophthalmology

Otolaryngology

*Division Chief*

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Pediatric Otolaryngology—Head and Neck Surgery, Pediatric Laryngology, Bronchoesophagology

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Audiology

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Head and Neck Cancer, Otolaryngology—Head and Neck Surgery

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Pediatric Otolaryngology—Head and Neck Surgery

Otolaryngology (continued)

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Audiology

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Laryngology, Laryngeal Surgery and Voice Rehabilitation

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General Otolaryngology

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Speech Pathology

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Speech Pathology

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General Otolaryngology

Joseph R. Raviv, MD  
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Rhinology, Nasal and Sinus Surgery, Endoscopic Skull Base Surgery

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Audiology

Maria Secaras, MA, CCC-A  
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Audiology

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Pediatric Otolaryngology—Head and Neck Surgery
Otolaryngology (continued)

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Neurotology, Acoustic
Neuroma Surgery, Cochlear
Implants, Stapes Surgery

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Audiology

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Audiology

Plastic Surgery

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Surgery, Pediatrics

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General Plastics, Plastic and
Reconstructive Surgery, Pediatrics

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Breast Reconstruction,
Aesthetic Breast Surgery,
Peripheral Nerve Surgery

Mark Sisco, MD
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Aesthetic Surgery, Breast
Reconstruction, Microsurgery

Jeremy Warner, MD
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Cosmetic Surgery Face
and Body, Plastic and
Reconstructive Surgery

Surgical Oncology

Division Chief
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Breast, Thyroid/Parathyroid/
Adrenal Surgery, Melanoma,
Sarcoma

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Liver, Pancreas

Lawrence Krause, MD
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Breast, Melanoma, Sarcoma

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Surgery

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Liver, Pancreas

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Breast, Melanoma

Thoracic Surgery

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Minimally Invasive Thoracic
Surgery, Lung and
Esophageal Cancer,
Mediastinal Tumors

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Lung Cancer, Thoracoscopy,
Esophageal Cancer

Trauma/
Acute Care Surgery/
Surgical Critical Care

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Trauma, Hernia Repair,
Gall Bladder

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Hernia, Gall Bladder, Colon

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General Surgery

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Trauma/ER Acute Care
Surgery, Appendicitis,
Cholecystitis

Urology

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Urology, Urologic Oncology

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Health

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General Urology

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Prostate Cancer

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General Urology, Incontinence,
Erectile Dysfunction

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Urologic Oncology, Prostate
Cancer, BHP

Vascular Surgery

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Vascular and Endovascular
Surgery; Minimally Invasive
Treatment of Aortic, Carotid
and Peripheral Vascular
Disease; Hemodialysis Access

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Venous Thromboembolism
and Coagulation Disorders

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Endovascular Treatment of
Vascular Disease, Minimally
Invasive Treatment of Vascular
Disease

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Vascular Surgery, Wound
Care and Peripheral Vascular
Disease

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Vascular Surgery, Lower
Extremity Limb Salvage and
Hemodialysis Access

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Varicose Veins and Venous
Vascular Problems

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