



DukeMed

MAGAZINE

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WINTER 2009



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Should health care
be rationed?



Five priorities for health care reform

Helping America overcome its other national crisis

The new president of the United States was elected on the promise of positive change for our country in many areas, including one of particular interest to us at Duke Medicine: health care reform. While the nation's attention has understandably focused more on the global economic crisis of late, we are encouraged that the new administration has continued to count health care reform as a priority.

Indeed, as President Obama noted, "If we want to overcome our economic challenges, we must also finally address our health care challenge." With national health care spending projected to significantly outstrip both the rates of inflation and of U.S. economic growth over the next decade, and to comprise 19.5 percent of the gross domestic product by 2017—even as some 15 percent of Americans go without insurance—it's evident that the current system is unsustainable.

Clearly, health care reform must expand coverage and control costs. Yet reform will be truly successful only if we broaden the conversation from how to finance care to how to develop and deliver more effective care. The goal of this focus is for long-term cost savings, but more importantly to put the emphasis of reform where it should be: on how we can best use our resources to improve the quality of people's health and lives.

Duke Medicine has long grappled with this question—and applied our strengths in clinical care, education, and research to develop innovative solutions. Based on our experience, we believe the following should be priorities for health care reform:

► **Develop new models of primary care** that expand access to quality care despite a shrinking supply of primary care physicians. One example is the "medical homes" model, which relies on multidisciplinary care teams and coordinated communications to provide proactive, patient-centered care.* In 1997, Duke helped pilot a medical homes/care management program that pays providers to coordinate care for Medicaid patients.

Now statewide, Community Care of North Carolina saved North Carolina Medicaid an estimated \$154 million in fiscal year 2007. Duke has continued to advance the project, developing systems that monitor Medicaid claims data to follow patients and trigger care interventions as needed. With our track record of innovation in education—including founding the PA profession in 1965—Duke is prepared to equip providers to play leading roles in these new care models.



► **Fund partnerships between public health agencies and providers** to meet a shared goal—reducing chronic illness through prevention. Public health, employers, and providers typically work in silos, but there's real power in bringing communities together to improve health—as we're demonstrating through Duke's Center for Community Research (DCCR), an NIH-funded program that unites Duke and community partners in finding ways to improve the health of Durham residents.

► **Support comparative effectiveness research** that improves the quality and value of care by identifying which interventions work best. As an international leader in this area, thanks to longstanding projects such as the Duke

Databank for Cardiovascular Disease, we believe it is vitally important to strengthen our nation's ability to conduct population-based outcomes research. Collaborations between communities and academic health centers, such as the DCCR, provide an ideal platform for tracking patient data over time to continuously assess and improve the effectiveness of clinical care.

► **Strengthen and streamline national quality-of-care measures** using the new evidence generated through such research—and hold providers accountable for performance.

► **Realize the potential of personalized medicine** by funding research and supporting novel clinical interventions. Advances in genomic research are yielding unprecedented information about which treatments work best for which individuals. At Duke we are pioneering genomic approaches to treating diseases such as cancer and diabetes, and building models for incorporating genomic medicine into clinical care. This work is laying the foundation for what Duke calls "P5 Medicine"—care that is preventive, preemptive, predictive, personalized, and prospective. By transforming medicine from reacting to disease to proactively preventing illness, we will ultimately reduce costs while improving care.

As America embarks on health care reform, we believe that academic health systems like Duke can not only provide vital perspectives to policymakers, but serve as "living laboratories" that develop and test the creative, innovative approaches to care that will transform our nation's health care system. We look forward to playing a role in this national effort, and are excited about the potential for improving health care for all in our great nation.

VICTOR J. DZAU, MD
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*Learn more at medicalhomes.duhs.duke.edu.



Born in the blood
 Duke's young blood-cancer researchers are turning genomic research into tumor treatment.

Robots in the OR
 How they're changing the face of surgery—and how they aren't



Sound plans
 A new hearing center aspires to fill the world with sound for those who suffer from hearing loss.

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Dial DUKE for details

In every issue of *DukeMed Magazine* we include this contact information as a footnote on many pages:

Physicians call 1-800-MED-DUKE (633-3853),
patients and consumers call 1-888-ASK-DUKE (275-3853)

We thought it might be time to explain who exactly is waiting on the other end of those phone lines.

The Duke Consultation and Referral Center (DCRC), a team of 15 customer service representatives, has long been the first point of access to Duke Medicine for both referring physicians and patients. In 2008, Genese Newman, who founded the call center back in 1994, returned to Duke after a seven-year hiatus to head the DCRC. She's been busy training and reinvigorating the abilities of the center to assist physicians and other callers with:

- Patient appointments
- Consultations with a Duke specialist
- Complimentary maps
- Admissions to Duke University Hospital
- Patient status reports
- Continuing medical education events
- Duke clinical programs and services
- Clinical trials information
- Acceptance of health care plans

If this issue of *DukeMed Magazine* piques your interest in some of Duke Medicine's offerings, we hope that you'll find these resources helpful in learning more. And, as always, we hope you'll write to us here at the magazine with your comments: dukemedmag@mc.duke.edu or DukeMed Magazine, DUMC 3687, Durham, NC 27710.

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Specialty-care program for the uninsured up and running

Duke Medicine and community providers pledge 2,800 care episodes so far through Durham's new Project Access initiative

MANY OF DURHAM'S uninsured residents have long received primary care at Lincoln Community Health Center (LCHC), a federally qualified health center, or one of its five satellite clinics—the Wellness Center at Hillside High School; Health Care for the Homeless located beside the Urban Ministries shelter; the Durham Health Department's HIV/Early Intervention Clinic; and two Duke-sponsored clinics in the Lyon Park and Walltown neighborhoods. Last year, LCHC cared for more than 27,000 uninsured patients.

A new initiative now offers much-needed specialty care to some of those same people—those with medical conditions that require care beyond what their low- or no-cost primary care providers can deliver.

The program, Project Access of Durham County (PADC), is a collaboration among community institutions that include Partnership for a Healthy Durham; Durham Congregations, Associations, and Neighborhoods (CAN); the Private Diagnostic Clinic PLLC (PDC) at Duke; the Durham County Health Department; the Durham-Orange County Medical Society; and Duke's Division of Community Health.

"The program exists because physicians from the PDC and the Durham community were willing to donate medical care, and Duke University Hospital, NC Specialty Hospital, and Durham Regional Hospital agreed to donate all hospital costs associated with that care," says PADC executive director Sally Wilson. "Durham Diagnostic Imaging and LabCorp are likewise donating services."

PADC is an independent non-profit organization that subcontracts with Local Access to Coordinated Healthcare (LATCH)—an existing Duke Community Health program aimed at improving the health of Durham's uninsured—to provide care coordination and disease management for patients enrolled in PADC.

Rheumatologist Rex McCallum, MD, is a participating specialist, in addition to serving as PDC associate medical director at Duke and as a Project Access board member.

"What's nice is that these patients have an established primary care home at Lincoln, which isn't always the case with the

uninsured," says McCallum. "That gives us specialists confidence that after we work with the primary care providers to fulfill our part of the care process, the patients can go back to Lincoln and be well cared for."



"Medical volunteerism is not a complete solution to the lack of access to care in this country for the uninsured, but it's a way for us to make inroads in our community. We're proud to be involved in this important step in the right direction."

— HOWARD J. EISENSON, MD, CHAIR,
PROJECT ACCESS MEDICAL COMMITTEE

"PADC is about creating an infrastructure that's a critical part of Durham's health care 'safety net,'" says Fred Johnson, director of clinical services for the Division of Community Health. "It reflects a core value of Duke Medicine—to reach out and commit to meeting the health care needs of the community."

PADC also helps patients access low- and no-cost ancillary services, hospital care, pharmacy services, and critical disease- and

care-management services. The only costs to patients are \$4 co-pays for prescription medications; all services are donated.

The program serves people who:

- Have lived in Durham County for at least six months
- Are uninsured and not covered by Medicaid, NC Health Choice, or Medicare
- Have family incomes equal to or less than 200 percent of federal poverty guidelines
- Are enrolled as patients at LCHC and have been seen at least twice by an assigned primary care provider

"The program is not designed for walk-ins," Johnson says. "Our goal is to provide this population with a primary-care home while building a system that also addresses their specific medical needs over the long term."

Many specialists have committed to provide about 2,800 episodes of care so far—2,000 from Duke providers and 800 from community providers. As of December 31, some 460 LCHC patients had enrolled in the program and 573 specialty consults had been scheduled, with about 75 percent of those completed. (Some patients require more than one consult.)

"About half the providers who have committed time so far are from surgical specialties such as neuro, pediatrics, general, and ophthalmology," Johnson says, adding that since PADC's July 1 kickoff, orthopaedics and pulmonology in particular are seeing a large number of referrals.

PADC also has support in the form of major funding. Durham County has contributed \$376,000 this year; the Blue Cross Blue Shield of North Carolina Foundation will provide \$225,000 over three years; and The Duke Endowment has contributed \$341,760.

"Project Access is another way that Duke, the PDC, and my colleagues can and do work with our colleagues in the community to do something positive for everyone," McCallum says. "It's just the right thing to do."

To learn more about Project Access of Durham County, call [919-470-7262](tel:919-470-7262).

Health system turns 10

2008 MARKED THE TENTH ANNIVERSARY of the creation of Duke University Health System (DUHS), in which Duke’s single hospital, medical school, and faculty practice in Durham evolved into an integrated academic health-care system delivering a full continuum of services throughout central North Carolina.

Established in 1998 after Duke forged partnerships with Durham Regional Hospital, Raleigh Community Hospital, and other regional health care providers, DUHS today includes three hospitals; ambulatory surgery centers; some 170 primary, specialty, and urgent care clinics; home care and hospice services; and affiliations with dozens of community hospitals across the Southeast.

“The formation of the health system was Duke’s answer to the growing pressures of managed care and slashed federal funding,” says chancellor emeritus Ralph Snyderman, MD, first president and CEO of DUHS. “But it became much more than a solution to the problems of the time. It revolutionized how Duke operated and created a completely new model for academic medicine.”

As an integrated health system, DUHS harnesses Duke University Medical Center’s academic and research strengths to continually improve patient care. It has also enabled Duke to better meet the needs of a fast-growing region. “Because of our health system, patients from all over the Triangle and central North Carolina can access Duke-quality

“One of the greatest challenges facing health care today is how to deliver the right care in the right place at the right time. The health system gives Duke a framework for answering that challenge.”

—Victor J. Dzau, MD

care—from primary care to specialized medicine and surgery—delivered by Duke faculty and affiliated providers,” says William J. Fulkerson, MD, CEO of Duke University Hospital.

“One of the greatest challenges facing health care today is how to deliver the right care in the right place at the right time,” says DUHS president and CEO Victor J. Dzau, MD. “The health system gives Duke a framework for answering that challenge. As we continue to expand our clinical services and develop new and improved models of care, the

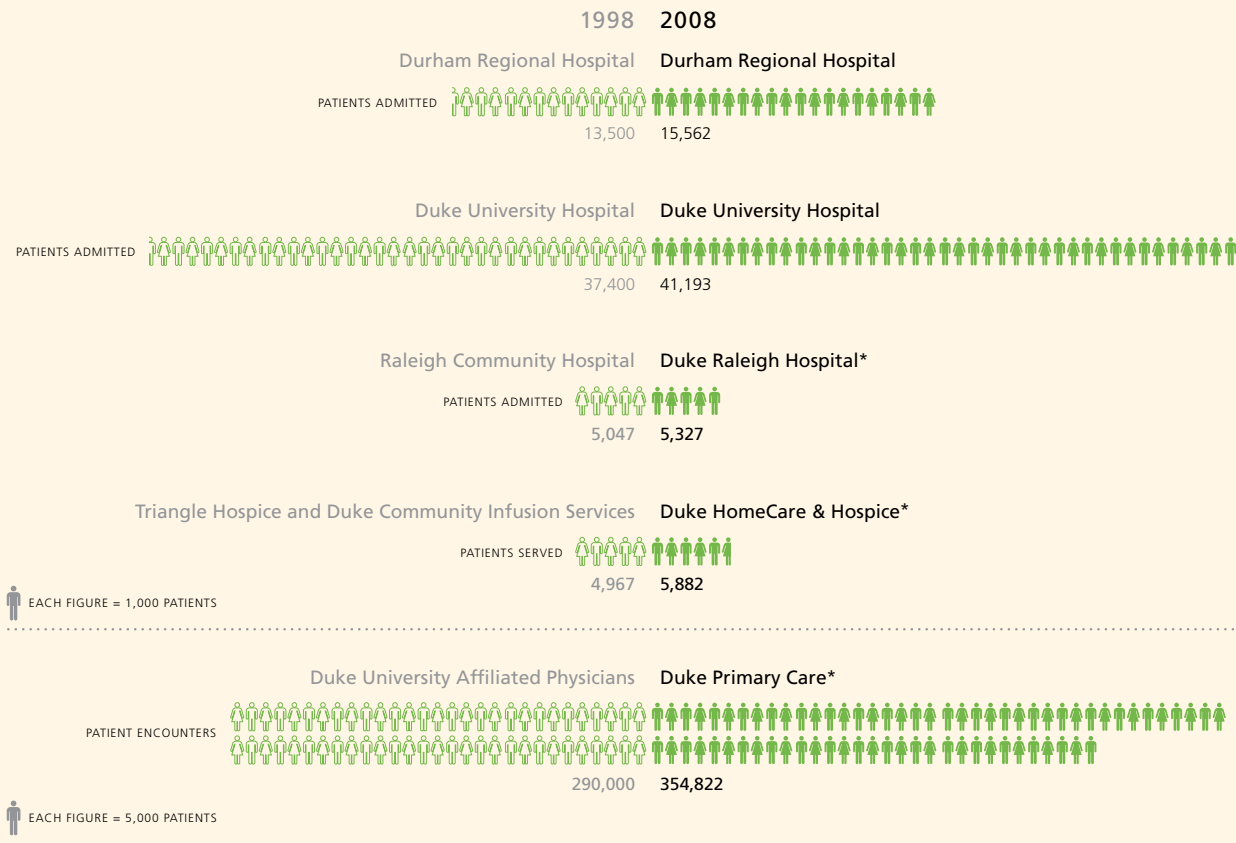
health system will enable us to deliver care even more effectively and efficiently to the people we serve in the years to come.

“On the occasion of its tenth anniversary, I want to thank our physicians, nurses, and staff throughout the health system for the excellence in care and teamwork that make DUHS one of the nation’s preeminent integrated health care systems,” Dzau adds. “We have reached far and accomplished much, and have many reasons to be proud.”

For more information, visit dukemedicine.org.

Duke University Health System, Then and Now

Ten years after its founding, DUHS is serving more patients than ever at sites across the region.



Long-term extension of Duke/Durham Regional lease approved

THE DURHAM COUNTY BOARD OF Commissioners has approved an amendment to the lease between the Durham County Hospital Corporation (DCHC) and Duke University Health System (DUHS) for Durham Regional Hospital that calls for an extension of the original 1998 lease term from 20 years to an annually renewable 40-year term. Effective January 1, 2009, the lease extends the horizon of Duke's commitment to the citizens of Durham County for the foreseeable future.

"This lease amendment is important to Durham for many reasons," says Ellen Reckhow, chair of the Durham County Board of Commissioners. "It not only ensures the long-term success of Durham Regional as a leading community hospital, but also reflects a commitment and conviction by the county and DUHS to increase the support and funding of Lincoln Community Health Center and Durham County Emergency Medical Services."

"DUHS is committed to the long-term health of the citizens of Durham and this lease amendment will enable us to provide them the very best in health services well into the future," says Victor J. Dzau, MD, chancellor for health affairs and CEO of DUHS. "I want to especially commend the county commissioners for their forward-thinking action on behalf of the citizens of Durham County and its surrounding communities. Over the past 10 years, working closely with DCHC, we have invested nearly \$80 million in capital improvements to Durham Regional, and as part of the lease agreement have

made very significant contributions to Lincoln Community Health Center and Durham County Emergency Medical Services."

Recent capital investments in Durham Regional Hospital (DRH) supported the creation of a state-of-the-art, 22-bed intensive care unit and a hospital-based outpatient clinic to house the Duke Center for Metabolic & Weight Loss Surgery. In the next year or so, there are planned investments of many millions of dollars to replace a cardiac catheterization lab, renovate obstetrics triage rooms, upgrade diagnostic imaging equipment, and install a new pharmacy supply system. The lease amendment paves the way

for longer-term investments by DUHS with the goal of establishing DRH as the premier community hospital in the state.

The lease payments from DUHS to the county include funds that the county has agreed to designate for support of Lincoln Community Health Center (LCHC) and Durham County EMS. Terms of the lease extension will result in increased lease payments to support LCHC and Durham County EMS that are adjusted annually for inflation over the life of the lease. This support will be critically important to Lincoln's mission of providing health care to medically underserved populations in Durham.



Durham Regional achieves Magnet status

DURHAM REGIONAL HOSPITAL (DRH) has achieved Magnet designation for excellence in nursing by the American Nurses Association's Credentialing Center, an honor earned by only 5 percent of the nation's hospitals. The November designation, which will be in effect for four years, followed a three-year application and evaluation process that included interviews with more than 500 nurses, physicians, and staff.

The Magnet status, which will help DRH add to its strong base of registered and certified nurses, "is recognition for the teamwork of not only the nurses, but also our physicians, staff, and volunteers who care for our patients and families," says Peggy Baker, EdD, RN, the hospital's interim chief nursing and patient care services officer. "The award isn't just for nursing—it's for the entire hospital."

Duke University Hospital earned Magnet status in 2006.

Learn more at durhamregional.org.



What to expect from Washington

Paul Vick, Duke University Health System's associate vice president for government relations, on how the Obama administration may shape the future of health care—and what Duke's doing to influence the debate



Q. How will President Obama change health care?

A. I think he'll crystallize public support for change in the health care system, which is something that's been missing in the past. The broad public engagement and inclusive character of this presidency should go a long way toward developing consensus for the fundamental principles of health care

reform and the mechanisms for implementing them.

As far as those principles go, when we hear this administration talk about the health care agenda, we hear words like *prevention*, *wellness*, *cost containment*, *portability of insurance*, *quality care*, and *universal coverage*.

Q. What will reform mean for physicians?

A. We'll see an emphasis on wellness, with an effort to shift patient care away from hospitals and the ED. There's also recognition that primary care physicians are both in short supply and underpaid, and that we must create health delivery models that strengthen their ability to provide care in underserved areas. I also think there will be an emphasis on widespread adoption of electronic medical records. How that's done is another question.

Q. The NIH budget has been flat for five years. Is there hope for increased funding for research?

A. Absolutely! The brightest hope right now is the \$1.5-billion appropriation to the NIH included in the economic stimulus bill passed by the House January 15, half of which will be available now for fiscal year 2009 and the other half available October 1 for fiscal year 2010. There is also discussion of a \$1.2-billion to \$1.8-billion increase for NIH in the omnibus appropriation bill for fiscal year 2009. This increase was approved by both the House and the Senate in the last session, and it's a good precedent for coming years. President Obama made a commitment during the campaign to double funding for the NIH over the next 10 years. He also made it clear that he'll remove the current ban on federal funding for embryonic stem cell research, which is an indicator of the kind of change he will bring.

Q. What about universal health care coverage?

A. President Obama's plan includes mandatory coverage for children, and we will move towards something that significantly decreases the number of adult Americans without health insurance. As for where the money comes to do that—and to address the swelling rolls of Medicare and Medicaid—it depends on priorities. We were able to find \$700 billion to bail out a series of companies, including the auto industry, for a period of a few months. There has to be consensus in Washington for the proposal to succeed. As a first, incremental step, Congress is expected to approve expanding SCHIP [the State Children's Health Insurance Program under Medicaid] soon after the presidential inauguration. The bill would cover 4 million additional children at a cost of \$32.4 billion, funded by an increase in the federal cigarette tax.

Q. How is Duke Medicine participating in the dialogue?

A. Several of our leaders are actively engaged in national health policy discussions. [Chancellor for health affairs] Victor Dzau met with Harvard economist David Cutler and participated in a telephone conference call with Tom Daschle to discuss health care reform. Cutler is one of the four or five people sitting around the table with Daschle [President Obama's White House health advisor and nominee for Secretary of Health and Human Services]. Geoff Ginsburg [director of Duke's Center for Genomic Medicine] and his colleagues at the Institute for Genome Sciences & Policy have been in conversation with President Obama's former Senate staff and Senator Richard Burr's (R-NC) staff over the last two years, working on their Genomics and Personalized Medicine Act. Robert Califf [director of the Duke Translational Medicine Institute] has been engaged on a national level on the Clinical and Translational Science Awards. Those are just a few examples.

Q. What's the bottom line for Duke Medicine?

A. I think we'll see positive things ahead. The potential for increased NIH funding is encouraging. Health care reform will bring stability to financial planning by addressing the issue of uncompensated care. If every patient has some health coverage it's easier to provide care at the appropriate time and place. And with a new focus on prevention we'll have a more rational use of health care dollars. It will be possible for a physician to make a living keeping people well. Duke is well positioned to make these shifts and to move forward with health care reform as a healthy, viable institution.

New place, new programs, new people in Singapore



LITTLE MORE THAN FIVE YEARS after Duke and the National University of Singapore (NUS) signed a memorandum of understanding to establish a new medical school in Asia—and just over a year since its first students matriculated—the Duke-NUS Graduate Medical School Singapore continues to mark milestones at a rapid pace. Among the latest news from Singapore:

- Construction of a permanent home for the school reached a milestone this past summer with the structural completion of the Khoo Teck Puat Building. Named for the late philanthropist Tan Sri Khoo Teck Puat, whose estate endowed Duke-NUS with \$80 million, the building will house research laboratories, teaching facilities, offices, a genomics research center, and an electronic medical library. Duke-NUS expects to move into the building during the first half of 2009.

- K. Ranga Krishnan, MB ChB, was named the new dean of Duke-NUS in July, succeeding the school's founding dean, R. Sanders Williams, MD. (For more on this and other Duke-NUS appointments, see page 48.)
- Duke-NUS has collaborated with the Lien Foundation to establish the Lien Centre for Palliative Care, Asia's first research and training center dedicated to care at the end of life. In addition to drawing upon Duke University's acclaimed end-of-life and palliative care efforts, the center will receive support from the National Cancer Centre Singapore and Singapore Health Services. The Lien Foundation has pledged \$7.5 million to the effort, which will be matched by the Singapore government. Directed by Duke's David Matchar, MD, the center opened in October.

Learn more at gms.edu.sg.



A new destination for the International Travel Clinic

COUNT FOREIGN AFFAIRS as one of Duke's many specialties. The Duke International Travel Clinic (DITC) has provided pre- and post-travel care for the jet set for more than 15 years. In August the DITC moved to a new location at Duke Urgent Care South in Durham.

In its new home and under new direction by W. Kevin Broyles, MD, medical director of Duke Urgent Care, the DITC continues to fulfill its mission to meet the health needs of a diverse population in an increasingly global world.

According to Karen Angelichio, RN, staff nurse at DITC, travelers are visiting more remote areas of the world, staying longer periods of time, and—as new diseases emerge and old ones re-emerge—exposing

themselves to risks that were unheard of just a few years ago. Many people with serious medical histories are also traveling. "Addressing these challenges with patients is beyond the scope of care for most primary care providers, specialists, and local health departments," says Angelichio.

The travel clinic serves not unlike an embassy, providing location-specific recommendations about safe foods and drinking water, sanitation, insect-borne diseases, driving conditions, accident risks, and security issues. Patients receive a personalized risk assessment based on their medical history, customized patient education materials, counseling, travel-related prescriptions, and recommended immunizations. Statistics have

repeatedly demonstrated that travelers who visit travel clinics prior to their trips rarely, if ever, return with health issues requiring medical attention.

Angelichio recommends that healthy patients schedule an appointment four to six weeks prior to departure—and cautions that patients with serious medical histories and pregnant women should schedule a consultation before making a financial commitment to an international trip. Most travel medicine services are not covered by insurance plans and therefore do not require a referral.

For more information, visit dukehealth.org/Services/TravelClinic or call 888-ASK-DUKE.

MAPPING DUKE MEDICINE

Visitors to dukehealth.org/locations can now access an online map of all Duke Medicine locations—plus detailed contact information and point-to-point driving directions. Here's a look at some of our newest sites.

More people, more clinics

Duke Medicine expands again in Wake County

ONE OF AMERICA'S FASTEST-GROWING metro areas is getting two new Duke Medicine locations to serve its rapidly increasing population. Triangle residents can access Duke care at the new Duke Medical Plaza Morrisville, opened in fall 2008, and Duke Medical Plaza Knightdale, slated to open in early 2009. Both locations will deliver primary, specialty, and urgent care in new, state-of-the-art facilities staffed by experienced board-certified physicians—and provide services in specialties such as cardiology, gastroenterology, orthopaedics, sports medicine, and ophthalmology (Knightdale only). Both will also offer advanced on-site diagnostic and imaging capabilities.

New hospice inpatient facility opens in Durham

DUKE HOSPICE'S HOCK FAMILY PAVILION, a 12-bed inpatient hospice-care facility that is the first of its kind in Durham, will open its doors to patients and their families this February.

The new facility is located on North Roxboro Road adjacent to Teer House (a Duke community health education center). The 15,100-square-foot facility will provide hospice care for patients in a quiet, home-like atmosphere. Patients who cannot adequately manage pain and symptoms at home, or who are transitioning from the hospital to their home, will have 24-hour access to skilled nursing care.

"Our goal is to help patients and their caregivers face the end of life with comfort, dignity, and compassion," says Starr Browning, executive director of Duke HomeCare & Hospice (DHCH). "The new inpatient facility is a long-awaited milestone that will allow Duke Hospice to expand its ability to provide inpatient hospice services for residents of Durham and surrounding counties."

Providing end-of-life care in the Triangle and surrounding counties since 1979, DHCH offers comprehensive hospice services, bereavement counseling for adults and children, home health, and infusion services. Hock Family Pavilion is the second DHCH inpatient hospice facility. A six-bed inpatient hospice care facility at the Meadowlands in Hillsborough, opened in 1996, was until now the only freestanding inpatient hospice facility in the Triangle.



Duke Medical Plaza Morrisville



Duke Medical Plaza Knightdale



Duke Hospice Hock Family Pavilion

Duke Children's opens pediatric cardiac ICU

ON JANUARY 5, Duke Children's opened the Pediatric Cardiac Intensive Care Unit (PCICU), a new intensive care unit dedicated to the care of infants, children, and adolescents with life-threatening heart disease. The PCICU is physically discrete from Duke's multidisciplinary Pediatric Intensive Care Unit, and is the first such unit in North Carolina.

The 13-bed unit features state-of-the-art equipment and a staff of highly trained physicians, nurses, therapists, and other health care personnel. Especially noteworthy is a sophisticated communications system that enables physicians and nurses to communicate with the surgical team while a patient is in the operating room.

"This dedicated space for cardiologists, intensivists, cardiac surgeons, and nurses will facilitate the best possible care for children with cardiac disease and will serve as an important resource for patients and families from across North Carolina and surrounding states," said Joseph St. Geme III, MD, chair of the Department of Pediatrics and chief medical officer of Duke Children's Hospital, at a ceremony dedicating the unit.



“The impending physician shortage, increasing burden of chronic disease, and the graying of America make the need for PAs greater than ever. This new facility will allow us to graduate more PAs to meet that need.”

—Justine Strand

PA program makes an expansive move

DUKE UNIVERSITY SCHOOL of Medicine’s Physician Assistant (PA) Program began the new year in a new home—the Blue Cross and Blue Shield of North Carolina (BCBSNC)’s Durham headquarters. The 15-year lease agreement represents a collaborative effort by the medical school and the state’s largest health insurer to foster the critically needed growth of primary care medicine in North Carolina, where the ratio of physicians to population is expected to drop by 21 percent by 2030.

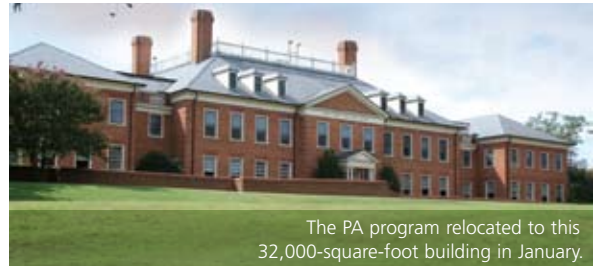
“The physician assistant profession was created at Duke 40 years ago to respond to a societal need for access to care,” says Justine Strand, director of the PA program. “The impending physician shortage, increasing burden of chronic disease, and the graying of America make the need for PAs greater than ever. This new facility will allow us to graduate more PAs to meet that need.” The move will make possible a potential expansion from the two-year PA program’s current enrollment of 56 students per class. It also stands to significantly boost primary care

in North Carolina, since 40 percent of Duke’s PA graduates stay in the state to work.

“As a company that’s been around for 75 years, we believe strongly in our responsibility and our commitment to helping the communities in which we work and live,” says Bob Greczyn, president and CEO of BCBSNC. “Our collaboration with Duke will help to increase access to primary care services and improve the health and wellness of North Carolinians. That’s a combination of resources that we all benefit from and one that has to be a priority for our state.”

Relocation of the PA program from the main medical center complex also puts the students and faculty from the nation’s oldest physician assistant program within walking distance of Duke’s community-based clinics.

“It’s a wonderful opportunity,” Strand says. “The new facility will give us space with our own identity and signature, something



The PA program relocated to this 32,000-square-foot building in January.

we’ve never had in our history. We’re deeply appreciative to Blue Cross for its vision and leadership for the role of primary care in North Carolina.”

Duke officials say the agreement, which follows on a separate recently announced lease at the Durham Centre, underscores the university’s role in supporting downtown Durham’s renaissance.

The Charlotte-based Duke Endowment will help support the costs associated with expanding the PA program, including the hiring of additional faculty.



Nurse practitioner Donna McLean (right) provides free medical care 20 hours a week to the residents of a substance abuse program in Durham.

Helping substance abusers “climb out of the hole”

ONE WEDNESDAY EVENING each month, Duke physician Ron Olson, MD, volunteers his time treating residents at a Durham substance abuse center. His time there is unremarkable in one sense. “It’s just community medicine,” he says. “The most common ailments are the same here as anywhere.” But another part of his experience is extraordinary. “Everyone here has been to the bottom of the hole and they’re now climbing out. They are so appreciative of everything you do.”

Olson has been volunteering at TROSA (Triangle Residential Options for Substance Abusers) “since the beginning”—that is, since Duke’s Department of Community and Family Medicine first established a volunteer program at TROSA eight years ago. He serves as medical director of the free clinic.

TROSA residents come to the center from all over the country, but most are from the Durham area. The long-term recovery program provides counseling, vocational training, and the tools residents need to maintain their sobriety after leaving the center. TROSA

gets its funding from the entrepreneurial endeavors of the staff and residents, including a moving company and a thrift store.

Six other Duke physicians, eight physician assistants, and occasionally medical students volunteer their time to provide health care. This particular Wednesday evening, Duke medical student Madeline Leong shows up to help out and to learn. “I have had an interest in addiction psychiatry since I took the course as an elective,” she says. “I just like being here. People here understand that change is possible.”

Olson estimates that the 350 residents receive about 20 percent of their medical care through the center’s clinic. For the rest, the residents—mostly men—are referred to UNC Hospitals, Lincoln Community Health Center, and Triangle Orthopaedic Associates, among others. Women residents receive gynecological care from the Durham County Health Department. In addition, thanks to a grant from the Kate B. Reynolds Charitable Trust, TROSA recently approached Duke about

contracting a nurse practitioner for 20 hours a week of on-site medical care.

Other Duke groups that participate in the care of the residents include Psychiatry, Student Health, the Diet & Fitness Center, Cardiology, and the Preoperative Screening Clinic.

Kevin McDonald, president and chief operating officer of TROSA, said medical care was an immediate concern when he established the center in 1994. Eventually he approached Duke’s Department of Community and Family Medicine for assistance. “Duke is a community resource,” he says. “They’re just people helping people.”

Olson says that he and the other volunteers gain as much as they give. Not only are residents appreciative, they are optimistic and resolute.

Stephonie Rorie, a resident for 90 days, heard about TROSA while he was incarcerated. “As soon as I was released, I got on a train and came here,” he said. “I feel great. And if I have my health taken care of, I can focus on my recovery. I am determined.”

Using virtual reality to kick the habit

CAN VIRTUAL REALITY (VR) and cell phones help crack cocaine addicts beat their addictions? Data from a recently completed study will soon reveal some preliminary answers, says lead investigator M. Zachary Rosenthal, PhD.

Fifty-three people addicted to crack cocaine participated in a two-part study that compared those who attended weekly (individual and group) drug-counseling sessions only to those who attended the same counseling in addition to participating in VR-based exposure therapy and receiving cellular phone-based reminders of coping strategies taught during the VR therapy.

In this study, the immersive technology enabled participants to practice their craving-management skills by entering a virtual but sensory-rich world to face people, places, situations, and conversations that generated real drug cravings. When participants said

the temptation had diminished—without using crack cocaine, obviously—they heard a tone, which they learned to associate with successful craving management.

This conditioning is about “engineering people’s responses to cravings when they’re in a therapeutic setting so that they can successfully respond to those cravings when they’re outside of a therapeutic setting,” says Rosenthal. That’s where ordinary cell phones come in: When participants felt a craving coming on in the “real world,” they could dial a number to hear the tone they’d come to associate with saying no to the drug, reinforcing their effort to stay clean. Despite VR’s “wow factor,” Rosenthal says he believes the phones—provided to each study participant—are where the real action happens.

“There’s a lot of traction in the long run to using portable technology to help people change their behaviors and respond differ-

ently to unhealthy things,” he says. “Most people can afford things like cell phones, so instead of relying on the traditional mode of treating issues like addiction—talking, waiting, and hoping—we can move beyond that to a more empowering, customized approach that is literally in the palm of your hand.”

Rosenthal is expanding the VR-cell phone model to other populations, as well. He will serve as primary investigator for an upcoming four-year study of combat veterans who have post-traumatic stress disorder, as well as addictions to cigarettes, alcohol, marijuana, cocaine, and/or heroin. “Exposure therapy is the gold standard for treating PTSD,” he says. “While the population is different, and patients will get exposure therapy instead of addiction scenarios, the novel elements of the therapy design will be the same.”

To learn more about these upcoming trials, call 919-684-6714.



Addiction tech tricks: Virtual reality allows addicts to face simulated people and places that generate drug cravings, so they can practice craving-management skills in a protected environment. They learn to associate a specific tone with success—and back in the “real world” they can use cell phones to dial in and hear that affirming tone as needed.

Genetic keys for Hep C treatment outcomes

HEPATITIS C IS AMONG the main causes of chronic liver disease, and its treatment is one of the most taxing in medicine. Researchers in the Duke Clinical Research Institute (DCRI) say a telltale set of newly identified proteins may be able to predict who will be most likely respond to current standard-of-care therapy for hepatitis C infection.

Sifting through an extensive DCRI biorepository of blood and tissue samples from three thousand patients with HCV, investigators carefully selected 30 serum samples. They discovered three factors, representing clusters of proteins or peptides, that can predict in nine cases of out 10 who will respond to therapy and who will not, before therapy is initiated.

“We have needed something like this for a long, long time,” says lead author Keyur Patel, MD, of DCRI. The team is now

validating the initial findings in a second set of 30 serum samples. If confirmed, the information from this study could lead to new treatment options and more informed treatment decisions regarding current therapies, according to study senior author John McHutchinson, MD.

The research, presented in November at the annual meeting of the American Association for the Study of Liver Disease, is the first to emerge from the MURDOCK study, a \$35-million genomic studies program based at the North Carolina Research Campus in Kannapolis, North Carolina. The MURDOCK study, funded by a gift to Duke University from philanthropist David Murdock, will help match treatments to patients’ unique genetic profiles.

To learn more about the MURDOCK study, visit its new Web site: murdock-study.com.

MERCiful intervention

JENNIFER TOLAN AWOKE THE MORNING of May 6, 2008, to discover that the severe headache she'd had for several days was accompanied by frightening new symptoms. When she nearly dropped her newborn son, she knew something was terribly wrong.

The then-25-year-old mother of three was so weak on her left side that she couldn't stand up. A relative dialed 911. By the time Tolan arrived at nearby Beaufort County Hospital, she was completely paralyzed on her left side. A computed tomography (CT) scan revealed what appeared to be a blood clot closing a brain artery.

"The doctor said that I was possibly having a stroke, and that I might need brain surgery," recalls Tolan, of Washington, North Carolina. "She said, 'We've got to get you to Duke.'"

Easier said than done; Duke Life Flight helicopters were grounded due to severe weather. But coordination among Duke, Beaufort County, and Life Flight transfer center staff—as well as a highway patrol escort—made the 127-mile trip in a Life Flight ambulance happen within hours.

After initial evaluation in Duke's Emergency Department, an angiogram quickly confirmed that there was a clot in one of Tolan's brain arteries, and also showed there was a tear (called a dissection) in her carotid artery. "The dissection in Ms. Tolan's carotid artery had developed a blood clot that traveled to her brain," explains neurovascular surgeon Ali Zomorodi, MD. "The artery needed to be opened up, and because that must happen within eight hours of the onset of weakness, it was literally a race against the clock."

"The time window for treatment with the clot-busting drug tPA had passed, but Duke has available other techniques for removing clots in certain types of patients who cannot be given tPA," says Larry Goldstein, MD, director of Duke's Stroke Center. Using the state-of-the-art MERCI (Mechanical Embolus Removal in Cerebral Ischemia) Retrieval System—FDA-approved for removing clots from brain blood vessels—Zomorodi and Tony P. Smith, MD, director of

Duke's Divisions of Vascular/Interventional Radiology and Neurointerventional Radiology, performed a complex endovascular angioplasty procedure offered at few centers in the country.

In a nearly four-hour minimally invasive procedure, a microcatheter was threaded from Tolan's groin to her brain. A balloon on the catheter pushed back the torn flap of the carotid artery, while a "corkscrew" on the catheter's tip (pictured) enabled them to grasp and remove the clot. A permanently placed stent will keep the artery flap pushed back to prevent future concerns.

"The manufacturer recently told us that Duke is the first center in the region successfully using MERCI with patients," Zomorodi says. Tolan, for one, is thankful: "They said I could have died or been permanently paralyzed or brain dead, but I was walking about three days after my stroke, and got to go home about a week later," she says.

The MERCI procedure is among the newest of many therapies offered by Duke's Stroke Center, which treats patients suffering from the entire spectrum of cerebrovascular conditions—those that affect the blood vessels in the brain and spinal cord. Its new Cerebrovascular Center is one of the country's few programs to expertly treat patients with both microsurgical and minimally invasive endovascular procedures, as well as with radiosurgery.

"Every year we treat more than 3,000 patients with cerebrovascular diseases, and as with all surgical procedures, the more you perform, the better the patient outcomes," says Gavin Britz, MD, director of Duke's Cerebrovascular Center. "The center also offers treatment options that range from relatively simple procedures such as aneurysm clippings and coilings, embolizations, and microsurgical resection of AVMs to complicated procedures such as cerebral bypasses and cardiac stand-still surgeries for complicated aneurysms. Our team is simply outstanding."

For more information, physicians may call 1-800-MED-DUKE (1-800-633-3853). Patients and consumers may call 919-668-0650.

Stroke studies

Diabetes and high blood pressure are two known causes of small-vessel strokes—but they explain only a portion of the risks, says neurologist Larry Goldstein, MD, director of Duke's Stroke Center.

As one of three centers in the country to receive an American Stroke Association-Bugher Foundation Center for Stroke Prevention Research Award, Duke is collecting blood samples from small-vessel stroke patients as well as people who haven't had strokes to determine whether particular genetic factors may contribute to a patient's risk, Goldstein says.

A sub-study will test patients' cognitive abilities to evaluate the overlap between stroke, small-vessel disease, and dementia. "Dementia is often caused by a constellation of factors, including blood vessel problems," Goldstein says. This part of the study will focus on African Americans, in whom small-vessel strokes are particularly common.

For more information about the Duke Stroke Center's research program, call 919-684-0052 or visit stroke.mc.duke.edu.

RACE moves into its second lap

A MAJOR DUKE-BASED INITIATIVE designed to speed up heart attack care in North Carolina is launching a second phase of development, which targets all 117 hospitals and 540 emergency medicine system agencies in the state. The effort builds on the success of the RACE program (Reperfusion of Acute Myocardial Infarction in Carolina Emergency Departments), founded by Duke cardiologists to serve as a model for the nation.

In this second phase, Duke, Durham Regional, Rex, UNC, and WakeMed hospitals are collaborating locally in an unprecedented fashion to provide coordinated and timely coronary reperfusion. The RACE program has also partnered with the American Heart Association (AHA). Through the AHA's Mid-Atlantic Affiliate, similar systems will be developed in South Carolina and Virginia. On a national level, an AHA program named "Mission: Lifeline" will provide \$30 million in funds to establish coronary reperfusion systems throughout the United States.

"The beauty of the RACE program is that it doesn't require novel treatments that could cost millions of new dollars. It's simply doing better and faster what we already know how to do," says Christopher Granger, MD, Duke cardiologist and a co-director of the project. "Now, with our next step, which we are calling RACE-ER (RACE-Emergency Response), we are recruiting every hospital and emergency medical service in the state to join us."

"The first phase and the transition into the second phase are direct results of the spirit of support and collaboration between area hospitals," says James Jollis, MD, Duke cardiologist and co-director of the RACE program. "At Duke, Jenny Underwood, RN, the Emergency Department, Emergency

Medical Services, and the Cath Lab have been especially pivotal to the initiative's success."

Studies have shown that when it comes to surviving a heart attack, every minute counts. Guidelines endorsed by the American College of Cardiology and the AHA state that patients suffering from heart attacks from blocked arteries should receive clot-busting medical therapy within 30 minutes or angioplasty within 90 minutes. Despite the proven value of such treatments, Jollis says that up to one-fifth of patients who could benefit from them are not receiving any treatment, and an even larger number are not receiving coronary artery reperfusion in a timely fashion.

RACE-ER, like RACE, will focus on patients with one kind of heart attack (known as a STEMI) that can be successfully treated with speedy, artery-opening care, although project leaders say a seamless, streamlined emergency response system is likely to improve care for patients with both types of heart attacks.

"The beauty of the RACE program is that it doesn't require novel treatments that could cost millions of new dollars. It's simply doing better and faster what we already know how to do."

—Christopher Granger, MD

When it comes to surviving a heart attack, every minute counts. Through the RACE program, member sites have:

- Reduced median time from patient arrival to treatment for hospitals offering angioplasty from 85 to 74 minutes (13 percent)
- Reduced median time from patient arrival to infusion of clot-busting therapy from 35 to 29 minutes (17 percent)
- Reduced median time from patient arrival to departure at transfer hospitals from 120 to 71 minutes (41 percent)
- Reduced median time from arriving at a feeder hospital to beginning treatment at a receiving hospital from 149 minutes to 106 minutes (29 percent)



Exercise is safe and beneficial for heart failure patients

HEART FAILURE PATIENTS who regularly exercise fare better and feel better about their lives than do similar patients who do not work out on a regular basis, according to findings from HF-ACTION—the largest clinical trial to date examining the value of exercise in the treatment of heart failure.

“Past studies have sent mixed signals about the merit of exercise for patients with heart failure. HF-ACTION shows that exercise not only is safe for patients, but also helps improve the quality of their lives overall,” says Kathryn Flynn, PhD, a researcher at Duke Clinical Research Institute and lead author of the quality-of-life substudy.

HF-ACTION investigators enrolled 2,331 patients with moderate to severe heart failure at 82 sites throughout the United States, Canada, and France from 2003 to 2008. Patients were randomized into a group that received usual care or to a group that received usual care plus an exercise training program. At three months, patients in both groups showed improvement, with exercise group members consistently outscoring those in the usual care group in measures of quality of life. Patients experienced modest but significant improvement in day-to-day activities such as working, walking, being able to dress and bathe, and getting out to

visit family and friends. “And the best news is that the gains were sustained over time,” says Flynn.

Researchers say the findings demonstrate that a relatively low-cost and readily available intervention can significantly improve the quality of life for heart failure patients—a finding that may be important for the country’s Medicare program, which currently does not pay for exercise therapy for patients with heart failure.

Study results were reported in November at the American Heart Association’s 2008 Scientific Sessions.



Just 25 to 30 minutes of aerobic exercise on most days of the week is enough to modestly lower the risk of hospitalization or death for patients with heart failure, according to the HF-ACTION study. **“The most important thing we found from this study is that exercise is safe for patients with heart failure, and when adjustments were made for specific baseline characteristics, it significantly improved clinical outcomes,”** says principal investigator Christopher M. O’Connor, MD, director of the Duke Heart Center.

Beta-blockers that give bonus benefits

A NEW DUKE STUDY PRESENTS evidence that two common beta-blockers, alprenolol and carvedilol, have potential to repair the heart and protect it, and possibly even to reverse some heart damage. The study was released in September in *Proceedings of the National Academy of Sciences*.

Until now, scientists believed that all beta-blockers worked in the same basic way: by binding to and blocking the beta-adrenergic receptor, a molecule on the cell surface that responds to the hormone adrenaline. Blocking the receptor moderates increases in heart rate and heart function that could be damaging to patients whose hearts are already overstressed. However, in this new study the authors demonstrate that some beta-blockers can actually stimulate molecular processes that the group has recently shown to protect heart cells.

Of the 20 beta blockers tested, only alprenolol and carvedilol were shown to stimulate the activation of beta-arrestin signaling, a protein known as an “off-switch” for beta-adrenergic receptors. “Based on these findings, we hope to design drugs that strongly bind in this way and activate this beta-arrestin pathway,” says Duke cardiology chief Howard Rockman, MD, senior author. “We call these drugs super receptor blockers, because they are designed to block the harmful actions of adrenaline at the beta receptor, but at a molecular level will activate other pathways that protect the cell.”



Howard Rockman, MD

New device may help healing after open heart surgery

MORE THAN ONE MILLION open-heart surgeries are conducted worldwide every year. And in up to 10 percent of patients, sternal instability is a painful side effect, resulting from the sternum's inability to heal after surgery. A new device developed by L. Scott Levin, MD, chief of plastic, maxillofacial, and oral surgery at Duke, can both treat and prevent sternal instability through sternal fixation that uses locking clamps rather than wires—the current standard practice—to hold the two halves of the breastbone together.

The device, called the Talon, is constructed from surgical titanium that pulls the sides of the sternum together using a ratchet mechanism. It can be removed if surgeons need future access to the heart—patients are given a sterile screwdriver to be carried at all times in case a reopening of the chest is ever needed.

Patients who suffer from sternal instability often report persistent chest pain around the breastbone and feel frequent clicking or grinding sensations. These symptoms indicate that the wires used to

hold the sternum together after surgery have either broken or come loose. The Talon holds the two sides of the breastbone in place without wires, relieving pain and expediting the healing process.

It may also lower the risk of infection present when wires are used. Sternal infections are infrequent but serious: about 10 percent of patients who contract an infection die from it.

Levin developed the Talon prototype in 1991, and it was approved by the FDA in late 2006 for use in patients. Duke is the first medical institution to offer the device. “This device has been highly useful to me when finishing open-heart surgery procedures,” says Duke surgeon James E. Lowe, MD. “Even though we still proceed with the utmost of care, with this smooth

device that wraps around the sternum, there's no chance of poking or injuring the heart upon chest closure.” Future clinical trials will determine whether it can replace wires as the standard of care for patients at high risk for sternal instability.



The Talon, developed by Duke's L. Scott Levin, MD

Frail heart patients fare poorly with current protocols

PATIENTS TREATED SOLELY with medications after suffering from chest pain, heart attack, or coronary artery disease are more likely to die during the first year following their initial hospitalization, according to a Duke study published in the August 2008 *Journal of the American College of Cardiology: Cardiovascular Intervention*.

Cardiologist Matthew Roe, MD, led a team of researchers in examining 8,225 patients from the SYNERGY trial. A majority of these patients (52 percent) underwent coronary stent implantation to open their arteries and 16 percent underwent coronary bypass surgery; 32 percent were medically managed, using medications recommended by current clinical practice guidelines.

Researchers found that death rates among medically managed patients increased rapidly during the first three months following release from the hospital, and stayed higher than those in the other two groups. At one year, the mortality rate was 7.7 percent among the medically managed group, 3.6 percent for patients who underwent stenting, and 6.2 percent among those who underwent bypass procedures.

Patients in the medical management group were more likely to be elderly women with low body weight, and more likely to have had peripheral artery disease, high blood pressure, diabetes, or a history of stroke or a previous bypass surgery.

“There are often very good reasons why stenting or bypass are not viable options for some patients,” says Roe. “What this study tells us is that for these patients who are medically managed, we need to come up with better treatment approaches that lessen their risk of death.”



Matthew Roe, MD

TRILOGY trial

A new clinical trial at Duke aims to improve medical management of heart patients. The TRILOGY study will compare two anti-clotting agents—clopidogrel (Plavix) and an experimental drug, prasugrel—in elderly and frail medically managed patients with chest pain and coronary artery disease. An earlier trial found that prasugrel was effective in reducing the risk of clotting, but it also brought about a higher risk of bleeding. The TRILOGY trial will compare the two drugs again, but will study a lower dose of prasugrel than in the earlier study.

For more information, call Craig McLendon of the Duke Clinical Research Institute at 919-668-8140.

Devices of the heart

Major Duke studies evaluate technological therapies for arrhythmia, heart failure

IMPLANTABLE CARDIOVERTER-DEFIBRILLATORS (ICDs) monitor the heartbeat for arrhythmia and deliver a jolt of electricity to restore normal rhythm if needed. Some patients describe the shocks as painful and unsettling, and earlier studies of ICD suggested that the mere anticipation of being shocked can cause significant anxiety. But results from the longest and most comprehensive study to date of ICD use to prevent death from sudden cardiac arrest—appearing in the September 4, 2008 *New England Journal of Medicine*—show that ICDs reduce this risk among patients with heart failure without significantly altering a person's quality of life.

Duke cardiologist Daniel Mark, MD, lead author of the study, and colleagues prospectively studied 2,521 patients enrolled from 1997 to 2001 in the Sudden Cardiac Death in Heart Failure Trial. Overall, investigators found that all patients enjoyed a good quality of life despite having significant heart failure. Patients with ICDs actually had somewhat higher quality of life scores at three and 12 months, when compared to those in the other groups. These differences diminished over time and disappeared at 30 months.

"Medical intervention almost always brings about unintended consequences," says Mark. "We began examining these patients when ICDs were still relatively new and, until now, we were not entirely sure that in using a device to prolong life we weren't causing additional problems. We are now happy to report that we found no evidence of that in this large trial. ICD users, on the whole, appear satisfied with the benefits and the consequences of defibrillator therapy."

IN ANOTHER GROUNDBREAKING TEST of cardiac technology, Duke researchers found that ventricular assist devices (VADs)—surgically-placed mechanical pumps that can support failing hearts or buy time to transplant—are associated with high hospital costs and high rates of early death among Medicare recipients.

The study, published in the November 26, 2008 *JAMA*, found that only half of nearly 3,000 Medicare patients who received a VAD between 2000 and 2006 were alive one year later. Mean Medicare hospital costs for patients who received VAD as a primary strategy for treating heart failure neared \$200,000, while the cost for patients who received a VAD after cardiac surgery was closer to \$100,000.

"The figures are somewhat discouraging, but we have to remember that all of these are very high-risk patients to begin with. Without a VAD, they probably would not have survived," says Duke cardiologist Adrian Hernandez, MD, lead author of the study. "While VADs have been proven effective in extending life, this study tells us that more needs to be done before they can be more widely adopted in patients with heart failure. Also, as physicians, we need to do a better job defining the time of optimal intervention and identifying who is most likely to benefit from a VAD."

The study also suggests that outcomes may depend in part on where VAD procedures are performed. Researchers identified 570 hospitals that implanted VADs, but more than half implanted only one VAD per year. Higher volume was significantly associated with lower risk of death, with risk of death 31 percent lower in hospitals performing at least five procedures per year. (Duke surgeons perform more than 40 VAD procedures annually.)

No age limit to the benefits of hip replacement

TOTAL HIP ARTHROPLASTY is as beneficial to people in their 80s or 90s as it is for someone in their 60s, according to a Duke study published in the June 2008 *Journal of the American Geriatrics Society*. The study, the largest of its kind to date, examined data from 1992 to 2003 in a randomly selected group of Medicare beneficiaries who represent 96 percent of the U.S. population aged 65 and older.

Total hip replacement is an invasive treatment with an intense rehabilitation period, which may help explain reluctance among patients 85 years and older—and their physicians—to choose the procedure. "We know that hip replacements are relatively safe and reports have shown a very high rate of patient satisfaction due

to reduced pain and increased range of motion," says Duke researcher Linda George, PhD. Seniors with osteoarthritis who undergo total hip replacement are twice as likely as those who do not to show improvements in physical functioning and increased ability to care for themselves.

Researchers found that total hip replacements provide a cost savings to the health care system because reimbursement for the procedure (averaging \$4,000 to \$6,000 for the replacement joint itself) proves less costly than the long-term cost of health care for the disabled, which is estimated at approximately \$50,000 per year.



Cancer survivors go rogue with dietary supplements

ONE OF THE MOST COMMON BEHAVIORAL CHANGES cancer survivors make—often without a doctor's advice—is taking dietary supplements in hopes of bolstering their health.

A new study from Duke, Pennsylvania State University, and University of Texas M.D. Anderson Cancer Center shows that cancer survivors are not heeding recent warnings about supplement use. The study of 753 people 65 years or older, published in the August 2008 *Journal of Cancer Survivorship*, is the first to focus on older, long-term survivors of colorectal, prostate, or female breast cancer. Investigators found that almost 75 percent of the survivors were taking some form of supplement. Moreover, a February 2008 study in the *Journal of Clinical Oncology* found that up to 68 percent of

physicians treating cancer survivors are unaware of their patients' supplement use.

In 2006 the National Institutes of Health issued a statement on the link between supplementation and increased risk of cancer recurrence or a secondary cancer, which also was highlighted in a 2007 study published in *JAMA*. Research published in 2006 in the *American Cancer Society Journal* shows that antioxidant supplements can interfere with chemotherapy. Duke researcher Denise Snyder says older cancer survivors should talk with their health care provider or a registered dietitian about supplements. "Recent research indicates that it is probably best to get your nutrients from foods, not supplements," she says.

New radiosurgery for brain and other cancers

THIS SPRING DUKE BECAME the first medical center to use the Novalis Tx system to treat patients with brain tumors. This next-generation radiosurgery system destroys diseased tissue by focusing high-energy, precisely shaped beams of radiation from multiple directions. The system allows the physician to target a tumor precisely and minimize damage to healthy surrounding tissue. Treatment takes approximately one hour—as opposed to six hours for preparation and treatment with prior radiosurgery processes. Patients are fitted with a custom mask, which reduces the pain and anxiety associated with placement of the halo frame that was previously used. John Kirkpatrick, MD, PhD, who is clinical director of radiation oncology at Duke, says that "with this system we can safely, accurately, and efficiently deliver high-dose radiation, while minimizing the side effects of radiation therapy for our patients."

Experimental tool may spare some breast cancer patients extra surgeries

A DEVICE DEVELOPED AT DUKE may give surgeons a quick and accurate read on whether they have removed all of the tumor cells during partial mastectomy for breast cancer. The device, which uses a technology called optical spectral imaging, can quickly distinguish normal versus malignant breast tissue.

"One of the risks of partial mastectomy is that many women—up to 50 percent—have to be brought back to the operating room at a later date because pathologists discover that we didn't have clean margins," says Duke study investigator Lee Wilke, MD.

The device's readings have been compared to the standard pathological studies that any patient would get. Results show that the device allows surgeons to catch remaining cancer more often and reduces the number of times surgeons remove too much tissue.

"What's really exciting about this is that if it works, it could be the answer to a huge unmet clinical need," Wilke says. The results of the study were presented at the 2008 San Antonio Breast Cancer Symposium.

Predicting the future of colon cancer

RESEARCHERS AT THE DUKE INSTITUTE FOR GENOME SCIENCES & POLICY have developed a new model for predicting the recurrence risk of early-stage colon cancer, and also used the model to predict individuals' sensitivity to chemotherapy and targeted therapy regimens. Their findings appeared in the *Proceedings of the National Academy of Sciences* in December.

"By examining gene expression in the tumors, we have found certain patterns that seem to put some patients at higher risk for recurrence," says Katherine Garman, MD, a gastroenterology fellow at Duke and lead investigator on the study. "In our small dataset, we were able to predict which tumors were at risk for recurring, with 90 percent accuracy. By identifying these patients up front, we may be able to treat them in a targeted and proactive manner to prevent this recurrence and help them live longer and healthier lives."

Puzzling out the HIV infection process

TWO DUKE STUDIES highlight new findings on the earliest events occurring immediately upon infection with HIV-1—and may help in developing a vaccine. The studies show that the virus deals a stunning blow to the immune system earlier than was previously understood, suggesting that the window of opportunity for successful intervention may be only a matter of days—not weeks—after transmission, as researchers had previously believed.

Until now, scientists believed that interventions such as vaccines could be effective three to four weeks between transmission and the development of an established pool of infected CD4 T cells, which are the main immune-cell targets destroyed by HIV-1. The two studies, involving 30 people who were newly infected with HIV-1, show that the critical period for intervention may be five to seven days after infection. The findings appeared in the August and October issues of the *Journal of Virology*.

HIV screening works at every age

RESEARCHERS AT DUKE have found that HIV screening for most adults ages 55 to 75 is a cost-effective way to prolong life and decrease the spread of the disease.

“Many of us might think of HIV as associated with teens and younger adults, but statistics show that 19 percent of those infected were diagnosed at age 50 or older,” says Gillian Sanders, PhD, lead author of the study published in the June 17, 2008 *Annals of Internal Medicine*. Sanders says some of the newer, lower-cost, streamlined counseling formats might be particularly appropriate for this population. “All of us also need to remember that age doesn’t protect anyone from HIV. You’re as vulnerable at 60 as you are at 16.”

“The pace of discovery is picking up and the pieces of the puzzle are coming together. Little by little we are learning more about the very earliest stages of HIV infection and getting a clearer picture of what a successful vaccine will have to do.” —BARTON HAYNES, MD, DIRECTOR,

CENTER FOR HIV/AIDS VACCINE IMMUNOLOGY



Barton Haynes, MD

Weight-loss surgery for type 2 diabetes: Effective, but no magic bullet

EARLIER THIS YEAR weight-loss surgery was heralded as a potential cure for diabetes, after studies reported dramatic cases of post-surgical remission, particularly after gastric bypass surgery. The phenomenon is thought to be due to changes in the way hormones are secreted from the gut and the pancreas following gastric bypass, which re-routes how food is sent from the stomach to the small intestine.

A new Duke study shows that the surgery itself is not a magic bullet—weight loss is still a major reason why severely obese people with type 2 diabetes experience disease

improvement or remission following surgery. “Yes, there are physiologic changes related to the restructuring of the gastrointestinal tract that appear to influence the rapid improvement in diabetes following gastric bypass,” says Duke bariatric surgeon Eric DeMaria, MD. “But our study shows the patients who were able to get off medications completely and go into remission were the ones who lost the most weight.” The study, presented in June at the American Society for Metabolic and Bariatric Surgery, shows that the more weight patients lost, the higher their chances of disease improvement.

The Duke study followed 314 patients with diabetes who underwent gastric bypass surgery from January 2000 to October 2006. Of the 314 patients, 71 required insulin therapy to control the disease. After

12 months, all the patients were able to reduce the dose or number of their diabetes-related medications. Forty-eight percent of the 71 insulin-dependent patients had achieved remission.

However, DeMaria stresses that losing weight during the first three weeks to six months following surgery is critical for patients who ultimately put their diabetes into remission. “We’re a culture of quick-fix people,” he says. “Everybody loves the idea that diabetes is gone the day after surgery. But we know that an important mechanism is in place if the operation fails over the long term: poor behavior. Eating high-fat junk food and sweets, grazing or constant eating between meals, lack of exercise—those are major contributors to failure of weight loss surgery, and failure causes recurrent diabetes.”



Eric DeMaria, MD

Parents struggle with the fates of frozen embryos

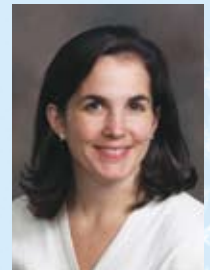
FERTILITY PATIENTS WHO are finished having children feel responsible for the stored, frozen embryos left over from their treatment, yet more than half are against implanting the embryos in anyone else, according to Duke research.

"This really turns our moral presumptions on their heads," says Anne Drapkin Lyerly, MD, an obstetrician/gynecologist and bioethicist at Duke and lead investigator of the findings that appeared in December in *Fertility & Sterility*. "Parents care very much about what happens to their embryos, but that doesn't mean they want them to become children," says Lyerly. "Our study shows that many feel they have to do what they can to prevent their embryo from becoming a child."

The survey of more than 1,000 fertility patients is the largest and only multi-site study to focus on the state of the nation's 500,000 frozen embryos currently in storage. It comes at a time when several states and even the federal government are attempting to enact legislation that would either assert an embryo is a person, allow abandoned embryos to be adopted by another couple, or allow unused embryos to become "wards of the state."

Previous studies have found that when childbearing is complete, as many as 70 percent of patients put off for five years—or more—the decision of what to do with those frozen embryos, even while they continue to pay annual storage fees. In Lyerly's study, the researchers presented four embryo disposition options: thawing and discarding; reproductive donation; indefinite freezing; and donation for research. The majority were unlikely to choose any of these options except for one: research donation. Twenty percent of the patients indicated they were likely to freeze their embryos "forever."

By bringing fertility patients' concerns to the forefront, Lyerly hopes the next step will be the development of clinical guidelines and ongoing informed consent processes for patients at various stages of fertility treatment. She also hopes it will encourage more detailed disclosure about the available disposition options and facilitate broad availability of disposition decisions that are morally acceptable to the majority of fertility patients.



Anne Drapkin Lyerly, MD

"Parents care very much about what happens to their embryos, but that doesn't mean they want them to become children."

—Anne Drapkin Lyerly, MD

A new way to get the gout out

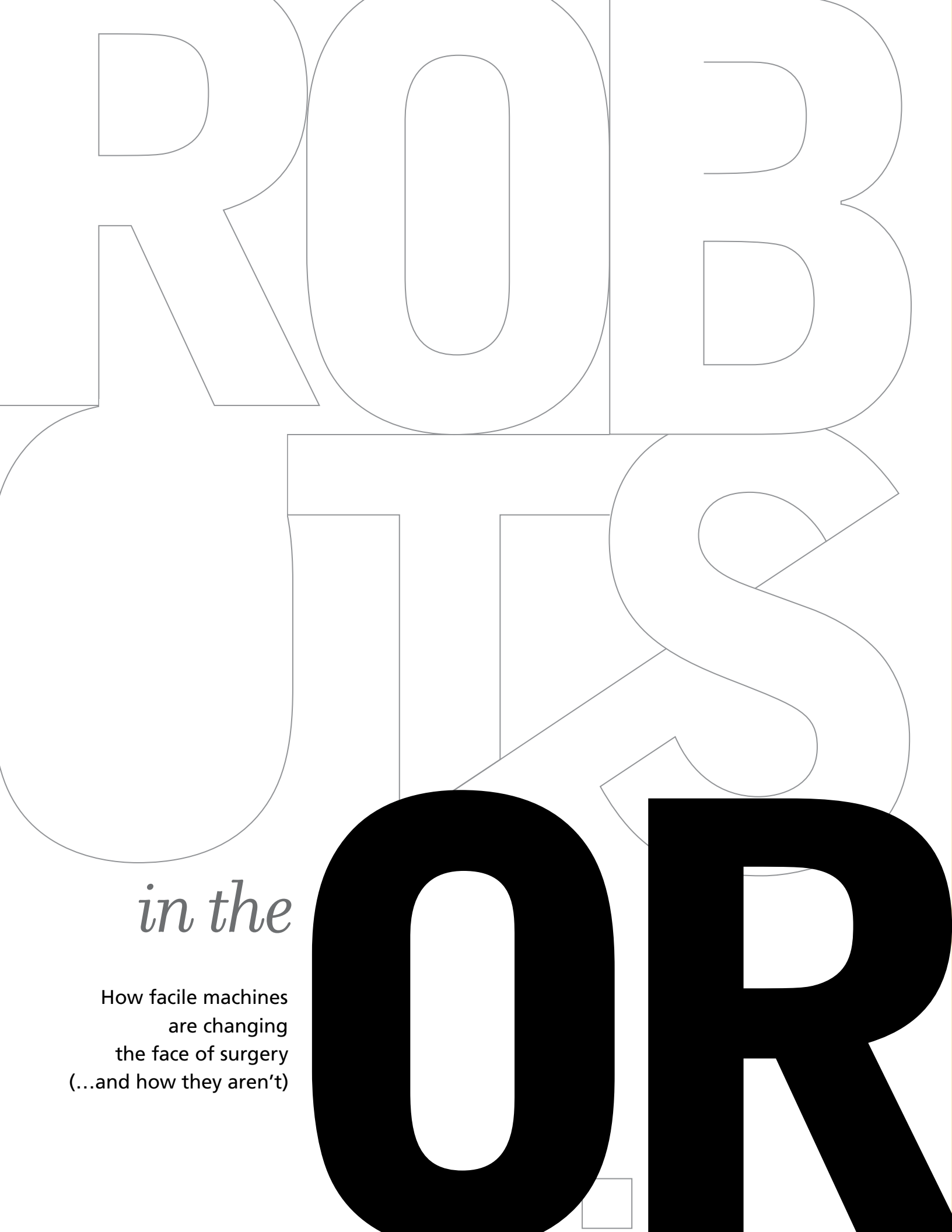
A NEW APPROACH TO treating gout—a debilitating form of arthritis—can normalize blood levels of uric acid within hours in patients who have failed to respond to any other treatments.

"There hasn't been a new drug for gout in the U.S. for over 40 years," says Duke rheumatologist John Sundry, MD, lead investigator of the study. "While most gout patients do well with the drug allopurinol, there is a subset of about 50,000 patients in the U.S. who don't respond to it or can't tolerate it and who have no real alternatives. These are the patients who might benefit from a new therapeutic option."

Current drugs treat gout by slowing the production of uric acid or speeding up ways to eliminate it. The new drug,

pegloticase, discovered by Michael Hershfield, MD, and Susan Kelly, PhD, at Duke and scientists at Mountain View Pharmaceuticals, works by breaking down uric acid into products the body can more easily eliminate. Results of two phase III clinical trials involving 212 patients with severe gout were presented at the annual meeting of the American College of Rheumatology in October 2008.

"Overall, we are very pleased with what we are seeing," says Sundry. "We are continuing to study the longer-term effects of pegloticase in an open label extension study. Many of the study participants appear to be doing quite well and are finally getting some long-awaited relief."



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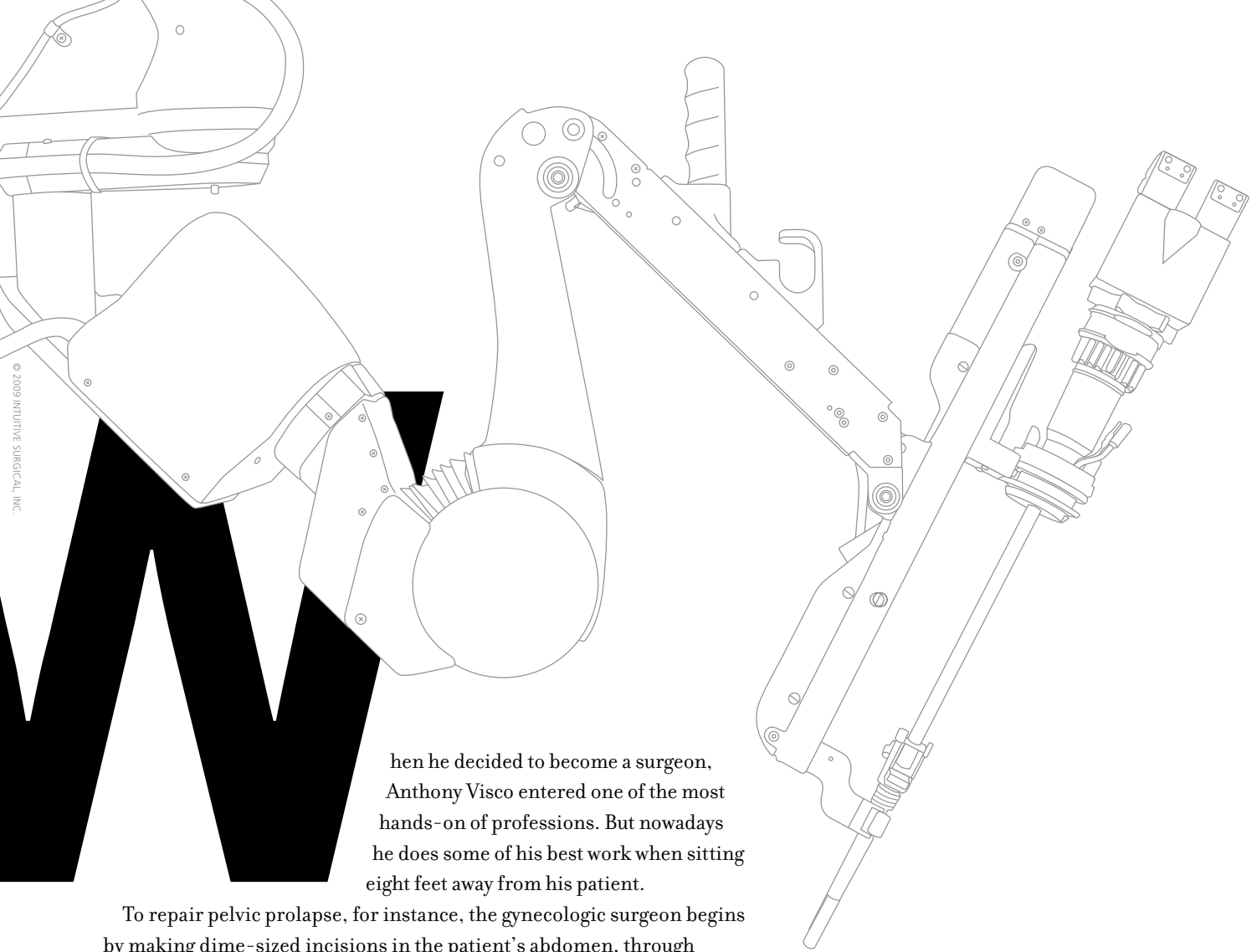
How facile machines
are changing
the face of surgery
(...and how they aren't)

ORR



by **Angela Spivey**
photography by **Jared Lazarus**

Urogynecologist Anthony Visco, MD, with one of Duke's surgical robots.



When he decided to become a surgeon, Anthony Visco entered one of the most hands-on of professions. But nowadays he does some of his best work when sitting eight feet away from his patient.

To repair pelvic prolapse, for instance, the gynecologic surgeon begins by making dime-sized incisions in the patient's abdomen, through which four hollow instruments called trocars are placed. He then steers a state-of-the-art surgical robot over to the patient's belly. The robot's four arms are docked—attached to the trocars—and then used to insert a camera and specialized robotic instruments such as forceps, scissors, a scalpel, or a needle holder into the patient's body.

Sitting at the robot console, Visco operates the instruments and camera using hand controls and foot pedals. His face rests in a viewer with left and right eyepieces. The views from the robot's two cameras merge to give a three-dimensional view of the operating field that rivals that of open surgery. "You can zoom in closer than you can with your own eyes," Visco says. As for the arms, there's little comparison—the robotic instruments can rotate much like the human hand, but with a greater range of motion and on a much smaller scale, enabling doctors to perform intricate maneuvers through keyhole incisions.

Engineered for dexterity, surgical robots have opened up new possibilities in the OR since they arrived on the scene less than a decade ago—enabling surgeons to give patients a minimally invasive option for some of the most complex procedures. Currently only one robotic surgical system is sold commercially in the United States, Intuitive Surgical's da Vinci Surgical System, which was approved by the Food and Drug Administration for use in general surgery in 2000. Since then it's been approved for a variety of cardiac, thoracic, urologic, and gynecologic procedures. Urology and gynecology appear to be the biggest users of robotics;

a 2008 financial filing from the company notes that robotic prostatectomies and hysterectomies make up 79 percent of the procedures performed with its system. Urologic surgeon David Albala, MD, says that data from the company show that in 2007, over 60 percent of prostatectomies in the United States were performed using the robot, up from some 40 percent in 2006.

Robotic surgery has been steadily gaining ground at Duke, too. Since the medical center acquired its first robot in 2002, hundreds of patients have come here from around the state and the country to have robotic surgeries.

Today Duke doctors have the most experience in North Carolina in robotic prostatectomies and the most experience in the world in robotic sacrocolpopexy (the procedure to repair pelvic prolapse).

But surgeons point out that while calling such procedures “robotic surgery” may sound cutting-edge, in truth they are robotically assisted; the robotic arms are just extensions of the surgeon’s hands. “Robotics isn’t going to take a mediocre surgeon and make him a great surgeon,” says Visco, chief of the division

of urogynecology in the Department of Obstetrics and Gynecology. The field has its critics, too; some surgeons at Duke say that robotics simply isn’t for them. But there’s no denying that robotics is making a major impact on the surgical scene—and at Duke, proponents and skeptics alike are leading efforts to define just what its place should be.

Writing the book on sacrocolpopexy

Developed at Duke in the 1960s, sacrocolpopexy, in which a mesh is

attached from the vagina to the sacrum, is considered the gold standard for repair of pelvic prolapse—a sagging of the pelvic floor tissues which can happen after menopause, childbirth, or a hysterectomy. One of the procedure’s progenitors taught it to Visco during his urogynecology fellowship at Duke in the late 1990s; Visco first learned to perform the open surgery, then the laparoscopic technique—in which surgery is performed through small incisions using specially designed handheld instruments.



Duke surgeons now perform hundreds of robotic procedures each year—mostly prostatectomies and gynecologic surgeries. “It’s an evolving field,” says David Albala, MD (left). “We’re continually modifying our practice based on new evidence in the literature.”



"I did a lot of open colpopexies. I believed in minimally invasive surgery. When I was exposed to the robot, it seemed like an obvious extension of what I was already doing," he says. Now he has literally written the book on performing them robotically—he authored the colpopexy training manual for the da Vinci system, regularly hosts courses at Duke, and provides live broadcasting of the surgery, so that surgeons and urogynecologists around the country can learn about the technique.

Visco expects the need for sacrocolpopexy to increase as the baby boomers age. And he now considers robotics the gold standard for performing that surgery in a minimally invasive way. Because colpopexy requires intricate steps such as attaching mesh, the laparoscopic version is just too hard for many surgeons to learn. "There are a limited number of people who can actually perform a laparoscopic colpopexy," Visco says. Tying knots and suturing is difficult with laparoscopic instruments because they're straight "like a pair of long, skinny needle-nose pliers," Visco says. And they don't bend. Urologic surgeon David Albala, MD, likens using laparoscopic instruments to operating with a pair of chopsticks.

Visco and colleagues have documented that robotic colpopexy does provide the short-term benefits that patients are looking for. They found that compared with the open procedure, robotic sacrocolpopexies provided similar short-term surgical outcomes, but the robotic group had significantly shorter hospital stays (1.3 days on average versus 2.7 days for open), and their blood loss was significantly less (103 ml versus 255 ml).

Duke owns four different robots, two at Duke University Hospital and one each at Duke Raleigh and Durham Regional Hospitals, which are used to perform a variety of procedures.* Like Anthony Visco, Duke urogynecologists Alison Weidner, MD, and Jennifer Wu, MD, perform robotic sacrocolpopexy and other robot-assisted procedures, while Cindy Amundsen, MD, offers other minimally invasive options for the treatment of pelvic prolapse. Gynecologic oncology surgeon Fidel Valea, MD, uses the robot mostly for radical hysterectomy, which requires a lot of dissection. Craig Sobolewski, MD, chief of the Division of Minimally Invasive Gynecologic Surgery, uses the robot mostly for myomectomy (fibroid removal), which involves a lot of suturing. "The robot is much more capable of mimicking what we do with

open surgery if you're putting in a lot of sutures," Sobolewski says. But he doesn't do simple hysterectomies robotically because he mastered the laparoscopic version years ago. As all these surgeons point out, they don't dabble; for each procedure, most of them pick one method, then perfect it.

In urology, Albala performs nearly all of his radical prostatectomies robotically. Other surgeons who offer the robotic procedure are Phil Walther, MD, Thomas Polascik, MD, Cary Robertson, MD, and Brant Inman, MD. Combined, these Duke surgeons now perform 300 to 350 robotic prostatectomies per year. Albala trains urologists from across the country in the procedure, helping to disseminate the new approach even more widely.

Climbing the learning curve

All these seasoned surgeons learned robotics in the midst of their careers, most using a training robot. The magnified view took some getting used to. So did keeping all three robotic instruments in view at all times. "If you can't see one of them, and your hands are in the cradles, you could make it do something you don't want it to," Valea says.

Then it's a matter of practice to get familiar with the power and sensitivity



Gynecologic oncology surgeon Fidel Valea, MD, directs the OB-GYN residency program, which offers residents training in robotic procedures such as hysterectomies, myomectomies, and pelvic floor reconstruction.



Judd Moul, MD, chief of the Division of Urology, says doctors need to make patients aware of the risks of robotic procedures as well as the benefits.

* For a full list of Duke physicians who offer robotic procedures, visit dukehealth.org/roboticsurgery.

Robotic instruments can rotate much like the human hand, but with a greater range of motion and on a much smaller scale



of the controls, and to learn to take full advantage of the wristed instruments. When Visco was in medical school, he would take suture material home and put stitches in his scrubs, to practice tying knots. He and colleagues did the same type of practice with the robotic instruments. Visco also videotaped his first robotic cases and spent time reviewing them, to find places where he could have tied a knot or made a cut more efficiently.

Though Albala's first few robotic prostatectomies took seven or eight hours, his speed increased as he got his bearings in the magnified view of the operating field. "Now, I feel like I'm in total control during the case. I know my landmarks. Once you learn how the robot moves, I think the surgery is simplified," he says. Surgeons seem to like the increased autonomy of the console; if they want to cauterize something, often they don't ask an assistant, they just press a foot pedal. And the 3-D, close-up visualization of the surgical field is considered by some to be better than they can get with their own eyes. "It's almost as if I've stepped inside the patient," Albala says.

First a dry lab, then you fly

When the two robots at Duke University Hospital aren't in surgery, they reside in a hallway outside the operating room. There, residents use petri dishes of coins and multicolored dollops of silicone to conduct their "dry lab" with the robotic instruments. Valea, who directs the Residency Program in Obstetrics and Gynecology, puts some of the residents through their paces. "I may tell them, pick up this coin, turn it over, put it in your other [robotic] hand, turn it over again," Valea says. "That's a great exercise because it teaches them transfer and it teaches them rotation of the hand." They'll also practice stitching the silicone dollops together.

In the OB-GYN residency, robotics isn't yet required, but most residents are proactive about learning it, Valea says. They learn to do robotic hysterectomies, myomectomies, and pelvic floor reconstruction. They take it in small steps, observing or assisting in surgeries first, then, when they've shown proficiency in dry lab, performing part of an operation, such as sewing up the vaginal cuff after a hysterectomy.

Once they've shown they can "fly," they move on to perform other parts and then a whole operation under supervision. "We're not putting first-year residents in there. They will have done the case open many times before they try it on the robot," Valea says. He doesn't set a certain number of cases as a criterion for moving on; each resident's competency is judged by the faculty, and that is how he or she is deemed proficient. He notes that's a trend in surgical training in general—using competency-based measures.

In urology, Albala uses a formal procedure to teach robotic prostatectomies.

Residents assist a senior surgeon for 10 cases before actually working at the robot console. For training purposes, the procedure is divided into three parts. Trainees first perform the third part of the procedure, which consists mostly of suturing, for 10 cases or until they become proficient. Then they do the second part of the procedure for 10 more cases, and only then do they take on the responsibility of performing two or more parts of the operation. "It's very regimented, and I'm in the room monitoring," Albala says.

In a study published April 2008 in the journal *Urology*, Albala and colleagues found that outcomes—blood loss and rate of positive margins—for 383 patients at Duke were the same whether the experienced surgeon performed the robotic prostatectomy or the resident performed it. "One of the things we're very proud of at Duke is we've trained 16 different surgeons in urology at this point in how to do robotics safely and with good outcomes," Albala says.

Are the benefits overhyped?

Like most of these surgeons, Judd Moul, MD, chief of the Division of Urology in the Department of Surgery, sees robotics as part of a trend toward minimally invasive procedures that will only keep growing. But he expresses concern that some hospitals acquire robots just to keep up with the Joneses, and others hype them so much that some patients think the robot is more than what it really is—a tool that needs the skill of a surgeon. In a study published October 2008 in *European Urology*, Moul and Albala found

that patients who underwent robotic-assisted prostatectomy were more likely to report being regretful and dissatisfied, possibly because they had higher expectations that they were receiving an innovative procedure. The study points to the need for doctors to make sure patients know all the risks and benefits of the procedures they may choose, Moul says.

For radical prostatectomy in particular, Moul wants to see more data to show that robotics is superior to open surgery. For both procedures, the rate of complications, such as incontinence

or sexual dysfunction, is the same. The smaller incisions possible with the robot do result in less blood loss, but at Duke it's not enough to cause a difference in transfusion rates, he says. Moul also points out that the incisions made for the robot are in the abdomen, higher on the body than the incision for an open prostatectomy. "It's important for patients to understand that the robotic prostatectomy is going through a cavity that wouldn't normally be entered for this surgery," Moul says. "Open surgery stays below the intestines, so there's a

A no-pressure place to learn laparoscopy

WHILE ROBOTIC SURGERY IS GROWING in popularity, laparoscopy is still the faster and more economical method of performing minimally invasive surgery for many procedures. But it takes practice. Surgical residents can hone their skills anytime without the pressure of the operating room in Duke Surgery's Surgical Education and Activities Laboratory (SEAL).

One of only a few comprehensive simulation centers in the United States, the 24-hour lab includes eight minimally invasive laparoscopic surgical simulators and five 3-D virtual reality laparoscopic surgical simulators. In addition, two endoscopy simulators enable residents to practice flexible bronchoscopy and upper and lower gastrointestinal flexible endoscopy procedures.

The lab's simulators mimic reality by using haptic feedback, real-time computer graphics and anatomic models developed from actual patient data. On the endoscopy trainers, for instance, the computer program's tools replicate patient swallowing and suction of gastric fluid. And haptic feedback makes the scope insertion and manipulation feel like working with a real patient.

Residents can use simulators to practice basic skills such as suturing and knot tying, and also to become more efficient at the series of steps required during patient management. "It's like a flight simulator; residents can practice algorithms and technical skills safely and efficiently in the lab," says Ranjan Sudan, MD, vice chair of education for the Department of Surgery.

In January 2008, the SEAL was accredited as a Level I Comprehensive Education Institute (CEI) by the American College of Surgeons. Level I, the highest level accreditation, is awarded only to those institutions that meet strict criteria and offer state-of-the-art surgical education.



Virtual surgery: Sophisticated simulators help residents gain proficiency in minimally invasive surgery—without scrubbing in.

The residency program uses the lab to offer a structured curriculum, Fundamentals of Laparoscopic Surgery, that beginning July 2009 will be required for newly graduated residents to be certified in general surgery by the American Board of Surgery, Sudan says. The curriculum is sponsored by the Society of American Gastrointestinal and Endoscopic Surgeons.

"The simulators make it possible for surgery residents and others to have effective and measurable hands-on surgical skills training experience in real time," says Marnelle Alexis, EdD, director of the CEI and an assistant professor in the practice of medical education in the Department of Surgery.

Aurora D. Pryor, MD, assistant professor in general surgery, is SEAL's medical director.

slightly lower chance of intestinal injury.”

Albala counters that studies from other institutions find that patients who have the robotic procedure show decreased blood loss, decreased transfusion rates, shorter hospitalization, decreased pain, and decreased analgesia use when compared to patients undergoing open procedures. “It’s an evolving field,” he says. “There are over a thousand robots in use now, and groups around the world are constantly improving the outcomes. We’re continually modifying our practice based on new evidence in the literature.” And he thinks that patients will drive increased demand for robotics. “With a robotic prostatectomy, the patient will leave the hospital the next day. The catheter will stay in place for about a week to 10 days. The patients like that,” he says.

Even Moul says the use of the robot has inspired him and other urologic surgeons to refine procedures. “We’re a competitive bunch. When the robotic guys came in and said ‘We can get patients discharged on day one,’ we open guys changed our techniques. We started using long-acting local anesthesia in the incision and tweaked this and tweaked that, and said ‘Okay, now we can get our patients out on post-op day one.’ It’s pushed us to reassess our whole practice pattern for radical prostatectomy and try to do a better job for all patients.”

Such efficiency translates into the intangible benefit of a calmer operating room. As with standard surgeries, the robotic operating team is honed so that everyone has a defined role to execute. “Even though the robot affords a lot of autonomy to the console surgeon performing the operation, it really is a team approach,” Visco says. “We owe a lot to the nurses and the OR and anesthesia staff. We’ve become very efficient at setting up the robot, for example. You need a group of people who are really

committed.” Adds Albala, “Duke is one of the few places where everyone in the OR, from the anesthesiologist to the nursing staff, is dedicated to robotic procedures—so patients are benefiting from having not just an experienced surgeon, but an experienced team.”

A robot for every OR?

Visco predicts that more and more doctors will adopt robotics because it provides a minimally invasive tool for surgeons who find laparoscopy too difficult. Laparoscopy has been around for more than 20 years, but Visco, Wu, and colleagues reviewed 2003 data showing that only 11 percent of hysterectomies in the United States were performed laparoscopically. “I think robotics is going to allow minimally invasive surgery to be an option for a greater number of patients,” he says.

But will robotics completely replace traditional laparoscopy? Duke surgeons aren’t sure. Valea thinks that laparoscopy will remain very popular as the current generation of surgeons with advanced laparoscopic training enters the field. “We’re infusing graduates from our training programs who are truly capable of performing advanced laparoscopy,” he says [see sidebar on page 26]. He also predicts that the cost of the robot (more than \$1 million to purchase, plus \$100,000 or more in yearly upkeep costs) will prevent it from becoming an everyday tool. “I think hospitals will reserve it for the most technically challenging cases. Otherwise you will need more robots, and that will just drive the cost of medical care even higher,” he says.

Open surgery will probably always be around, for several reasons. Some patients, because of weight or prior complications in the abdomen, aren’t eligible for robotic surgery—although, Albala notes, as surgeons gain experience,

they are able to offer the procedure to more and more such patients. And some hospitals don’t have the volume of cases needed to make the expense of the robot worthwhile and to enable their surgeons to become proficient at robotics, Albala says. It takes 25 robotic cases to get really comfortable and maybe 250 to become a master, but a surgeon at a community hospital may perform only 10 prostatectomies a year. “Many community-based urologists refer patients to us for robotic surgery, and then we transfer them back for follow-up care,” says Albala. “Since we were the first in the state to offer robotic prostatectomies, we’ve been able to build strong relationships with community physicians across the region, and we’re grateful for that.”

Visco thinks the ideal way to grow robotics is the same way he and his colleagues have perfected their skill with it—purposefully and carefully. “I think there is probably a pressure to offer this kind of new technique for patients,” he says. “But we still want to do the fundamental things—take care of patients, get them home in a reasonable period of time, have few complications if any, and give them good long-term outcomes. If we can do that with a minimally invasive approach? Great.” □

For more information

To find Duke physicians who offer robotic surgery, visit dukehealth.org/roboticsurgery.

Duke’s Department of Obstetrics and Gynecology offers robotic and other minimally invasive procedures for a range of women’s health conditions, including gynecologic cancers, fibroids, and pelvic floor disorders. For more information, visit dukehealth.org.


Learn more about the Duke Prostate Center at dukehealth.org/prostate.

* Note of disclosure: Visco consults for Intuitive Surgical, manufacturer of the da Vinci Surgical System.



BORN IN T

by Kathleen Yount
photography by Jared Lazarus



Liquid tumors like leukemia, lymphoma, and myeloma are notoriously unpredictable—but genomic research is yielding intelligence that may corner these elusive cancers at last.

THE BLOOD

One of Duke oncologist Sandeep Dave's favorite stories is that of a professor at his medical school. "He was the kind of guy who could run up the stairs and leave all the young students huffing and puffing behind him," Dave says. Unbeknownst to most of these winded students, the physician was also suffering from follicular lymphoma, which he was monitoring without treatment, according to his oncologist's recommendations.

One day on rounds the doctor suffered a heart attack and underwent emergency bypass surgery. "The recovery was terrible," says Dave—infection set into his chest incision; he was "essentially at death's door" and remained hospitalized for three months. He eventually recovered and returned to work—and when he visited his oncologist a few

months after the ordeal, bloodwork showed that his lymphoma had completely resolved.

Spontaneous remission can occur in a small minority of patients with follicular lymphoma—somehow the body's immune system wins the duel with the lymphoma cells that are attempting to overtake normal, healthy white blood cells in the lymph nodes and elsewhere. But a number of patients with the same disease will die within months of diagnosis. This sort of slippery prognosis makes the term *liquid tumors*—which includes leukemias, lymphomas, and multiple myeloma—especially apt. These hematologic cancers develop in the marrow of our bones, inexorably squeezing out the healthy cells in the blood that nourishes every tissue in our body. They can't be excised by surgery;

there are no known effective screening methods or reliable ways to reduce one's risk. And the number of patients with these cancers is rising.

Duke hematologic clinicians have achieved many of the greatest successes in liquid tumor treatment, from improving bone marrow and cord blood transplantation to testing targeted drug therapies such as imatinib (Gleevec). Meanwhile, Duke's discovery of the breast cancer mutation on the BRCA-1 gene and the development of the Institute for Genome Sciences & Policy have put Duke at the forefront of genetic cancer research. Nationally respected hematologic clinicians like Joseph Moore, MD, have built a sizeable patient base, while hematologic researchers like J. Brice Weinberg, MD, have built vast stores of tumor samples for

analysis. "We've had excellent research and excellent clinical care," says Duke hematologic malignancy program director David Rizzieri, MD, "but we haven't always had a good bridge between the two."

Over the last 10 years, though, the program has worked to link its large patient population with its prolific bench research. Much of this translational bridge has been built over the ever-swelling current of genomic discovery: a broadening understanding of exactly what genes are aberrantly active, or overexpressed, during the genesis of cancer. This type of analysis paints a portrait of a tumor in detail previously unavailable to researchers; for each tumor, it unveils a palette of overactive cellular processes, or pathways, that essentially make that tumor tick. Dave

says genomics makes possible the blueprint for personalized medicine: cancer treatment that begins with genomic profiling, so that patients receive only the therapies to which they are likely to respond. "It seems very commonsense," Dave says, "but it's far from the standard right now. The standard practice is that if the patient fails one treatment, he gets something else, then something else, then something else. And the results are highly variable—in many cases they are quite, quite poor."

Several years of genomic research have brought oncology to a watershed moment, Rizzieri says, with clinical trials of genomic-based therapies popping up in program after program. Now the youngest generation of liquid-tumor researchers at Duke carries the charge of walking this line between the bench and the bedside, to speed the translation of discovery into therapy.

Bettering the best

Chronic myelogenous leukemia, or CML, made headlines when Gleevec hit the streets in 2001. Hailed as a miracle worker, Gleevec (imatinib) has been quite effective in many patients by blocking a certain chemical pathway. But the drug is no panacea—it is not curative and a significant number of patients grow resistant to its effects. One of the drawbacks to Gleevec, says Duke cancer

biologist Tannishtha Reya, PhD, is that even in patients who don't develop resistance to the drug, it doesn't affect the cancer stem cells, which are the cells that propagate the cancer. "So you always have to be on the drug," says Reya. Her team has been searching for a new chemical pathway that could be targeted to attack the cancer stem cells and sidestep the biologic roadblock that halts Gleevec's usefulness in some patients. And they've hit a potential treatment jackpot: a pathway called Hedgehog, which is known to be active in many solid tumors. "There are currently several drugs in development that can block this pathway in solid tumors," Reya says, "so it was a really unique opportunity to see if the approach would be effective in leukemia." First the team studied mice

that were genetically altered to lack the Hedgehog pathway at birth. The mice had a significantly reduced incidence of CML, and those who did develop CML showed both delayed disease progression and a reduced number of cancer stem cells. Reya's team then tried blocking Hedgehog in normal mice using a drug called cyclopamine, a small molecule inhibitor that can be delivered easily into the body. Half of the mice treated with cyclopamine survived the cancer, while all of the mice that were not treated succumbed to the tumor. So Reya's group worked with David Rizzieri and John Chute, MD, to test the effects of cyclopamine on tumor samples from human patients who were in an advanced phase of CML. "The human samples have been remarkably responsive," she says, and the team is now planning to further

test Hedgehog inhibitors; if the studies bear out, she says, they could open a new window to therapies not only for CML but also for other liquid tumors.

Examining the anomalies

The CML treatment successes of the last decade grow more impressive when compared to current therapies for other forms of leukemia, many of which have been idling essentially unchanged since the late 1960s. The standard therapy for patients with acute myelogenous leukemia, or AML, is what's called the 7 and 3 regimen: a strategic pairing of two powerful chemotherapies to create a treatment that is aggressive, toxic—and in many cases simply ineffective.



David Rizzieri, director of Duke's hematologic malignancies program, says genomic research has brought liquid tumor treatment to a watershed moment.

"We've been getting the same abysmal results for years," says oncologist Arati Rao, MD. Only one in five patients diagnosed with AML lives five years after diagnosis; most die within a year or two. The prognosis is even worse for older people, who make up the bulk of AML patients and who have a two-year disease-free survival rate of less than 10 percent.

Rao is working to get to the biological bottom of what makes older AML patients so much tougher to treat. She and colleagues in the Netherlands and Germany gathered a cohort of 425 patients and studied patients who were 45 and younger and 55 and older. The clinical differences between the two

groups were considerable: most patients in the younger group responded to therapy, and they typically lived three times as long as the older group.

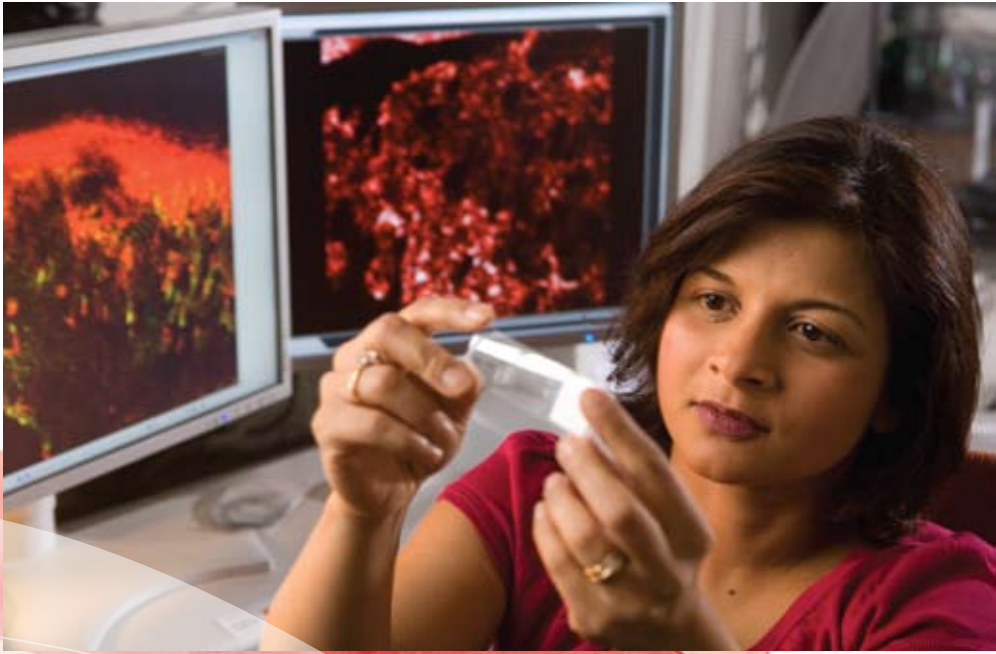
When gene-expression studies were applied to these patients, distinct clusters of patients began to emerge, based on their tumor biology, how the tumors developed, and their responsiveness to chemotherapy. The tumor cells in older patients, regardless of their other biologic traits, were uniformly unresponsive to therapy; for these patients there is no biologic opportunity for the merciless 7 and 3 regimen to work. That, combined with normal age-related health changes and complications, says Rao, might be the reason for these patients' poor prognosis.

Rao is collaborating with other institutions to amass a total of 1,200 patient samples. "We already have drugs

that target some of the overexpressed pathways found in older AML patients' tumors," she says, so if the initial results hold true, "we will be in a position to actually design clinical trials that are individualized," selecting new therapies to try based on the genomic makeup of each patient. At the very least, she says, physicians will be able to spare patients the risks and side effects of regimens like 7 and 3 when they are genetically destined to have no treatment benefit.

Pattern hunting

Guessing a tumor's destiny has become easier over the last 10 years. As techniques such as high-throughput sequencing have become more widely available, researchers have been able to create genetic sketches of one malignancy type after another—and in the class of liquid tumors, the subtypes of leukemia, lymphoma, and myeloma are legion.



Tannishtha Reya is seeking out the biologic weaknesses in cancer stem cells, which even the successful drug Gleevec can't kill.

"The idea is simple," says Sandeep Dave, pointing to a computer screen displaying a grid of jumbled green and red blocks. The grid maps the expression of 20 genes (a selection out of 25,000) in a group of patients with diffuse B-cell lymphoma—one of the most aggressive forms of lymphoma, and one of the first tumor types to be examined genomically. "Two samples of this type of tumor could look absolutely identical under the microscope and have two very different outcomes," explains Dave. "No one could understand why there was so much heterogeneity in these patients."

Genomic technology was able to turn the gene jumble on his screen into a very clear pattern. "A technique called hierarchical clustering groups together the samples with the most similar genetic makeup," he says, clicking to the next screen, where the jumbles are rearranged into a patchwork pattern—several patients who share a high-low expression pattern followed by several more who share a low-high

pattern. The small sample of each patient's intricate genetic quilt shows that while no two tumors are exactly alike, there are definitely ways to classify them into similar groups. And the clinical outcomes of these groups could be predicted based on their genetic expressions.

When Dave applied this same technique to follicular lymphoma, the disease that struck his med-school mentor, he looked for gene expression patterns that might explain the disease's widely variable prognosis—and he found them, though not where he thought he would. "We found genetic signatures in the patients' immunologic makeup that are associated with survival," he says, and these signatures are more predictive of positive outcomes than any clinical factors such as age and stage at diagnosis.

This type of genomic profiling is taking place throughout the field of oncology, in solid and liquid tumors alike—Duke's Institute for Genome Sciences & Policy has already initiated clinical trials in breast, lung, and prostate cancers, all based on genomic research. Led by Joseph Nevins, PhD, Anil Potti, MD, and Phillip Febbo, MD, the trials use genetic profiling of tumors as a means of selecting chemotherapy for participating patients. But Dave says that the hematologic research goes beyond predicting which existing chemotherapy will work best. "Chemotherapies in nearly every combination have been

tested in almost every hematologic malignancy,” he says. Instead, he believes that the patterns he finds can help focus research resources on the experimental models that are most likely to work. “There are over a hundred biotech companies trying to create new cancer drugs, in addition to the usual drug companies,” says Dave. “So the question is, what molecules are most likely to have an effect on which types of liquid tumor?”

An army of trials

Dave’s work to answer that question supports clinical investigators such as Anne Beaven, MD, who are launching an array of new, genomically based trials for liquid tumor patients. Beaven will

lead the lymphoma trial at Duke that tests whether the genetic patterns found by Dave correlate to clinical response to therapy; if successful, another wave of trials will use these patterns to pair patients with treatments. “It’s the first lymphoma trial of this kind at Duke,” Beaven says, that takes a patient-by-patient approach. “These aren’t going to be the therapies where 80 percent of all people with diffuse B-cell or follicular lymphoma will respond; we’re looking for agents that will work in 80 percent of a particular selection of patients.”

Beaven’s goal is to have clinical trials open for every major type of lymphoma.

“It’s important, as an academic medical center, that we offer that kind of availability,” she says. Oncologist Cristina Gasparetto, MD, a specialist in multiple myeloma, agrees. “At Duke we’re trying to offer lots of options to patients and their physicians,” she says, from proper staging of the disease to experimental approaches for high-risk or relapsed patients.

One option that is continually being improved at Duke is stem-cell transplant—currently the best treatment bet for many patients with multiple myeloma and other hematologic malignancies. Duke researchers Nelson Chao, MD, and Joanne Kurtzberg,

MD, are among those who have made transplantation a feasible, survivable therapy for an ever-growing number of cancer patients in an ever-widening age range, but the process is still a toxic one, and often frail patients are not good candidates. Gasparetto is investigating ways to improve transplantation and expand the number of patients who are eligible for the procedure. “We are testing new, powerful pre-transplant therapies that have lower toxicity,” she says, noting that these therapies are also being examined in patients who are not transplant candidates.

Last year Gasparetto was part of a Duke team, led by David Rizzieri, that published



Sandeep Dave’s genomic tumor profiling goes where microscopes cannot, predicting with new accuracy how lymphomas will (or won’t) respond to therapy.



Dan Wechsler examines six-year-old Marisa Rosa of Wake Forest, North Carolina, in the pediatric hematology clinic at Duke Children's Health Center.

Protecting young blood

SEVEN YEARS AGO, DAN WECHSLER, MD, PHD, treated a three-month-old girl who developed acute myelogenous leukemia (AML). She died within 12 days of her diagnosis. But her short life led to a discovery that may change the fates of other babies and children who develop AML.

Wechsler, who is chief of pediatric hematology-oncology at Duke, says that his lab discovered a genetic mutation in the baby's blood samples—a translocation of two genes that has since been confirmed in other pediatric AML cases around the world. Gene translocations are seen most commonly in children's cancers, but also play a role in other cancers: the Philadelphia chromosome that plays a role in chronic myelogenous leukemia (CML) in adults results from just such a mutation, and its discovery paved the way for the development of Gleevec.

The translocation Wechsler discovered is a swap of the usual location of two genes: CALM and MLL, a gene often involved in both pediatric and adult leukemias. With the help of researchers in his lab such as Catherine Lavau, DVM, PhD, who developed mouse-model techniques that are used worldwide in the study of leukemia, Wechsler is investigating how a disruption in CALM may trigger AML by interfering with a vital cellular process. As was the case in CML, such understanding of pediatric AML development could lead to improved, targeted therapies.

Pediatric hematologic malignancies, though they may have the same names as their adult counterparts, are actually different cancers in their genesis and in their behavior. And for the most part, they have much better outcomes: 50 percent of children who develop AML are cured, compared to only 20 percent of adults with AML; the cure rate for children with acute lymphocytic leukemia (ALL), the most common cancer in kids, is 80 to 85 percent in children and only 30 percent in adults. But childhood cure rates weren't always so good—in 1965 only 10 percent of children with ALL survived. Wechsler says this amazing advancement is a direct result of the Children's Oncology Group (COG), a National Cancer Institute-supported cooperative research group that links academic medical institutions throughout the country. Duke's pediatric oncology program is a member of the COG, and pediatric cancer patients at Duke can be enrolled in one of more than 65 current COG studies for a range of cancers—five of which are for leukemia.

All Duke pediatric hematology-oncology faculty members belong to the COG, and they make up a multidisciplinary team that combines pediatric oncologists, radiation oncologists, surgeons, pathologists, and social workers to treat children with cancer.

To learn about the program or any of the COG clinical trials, please call [919-684-3401](tel:919-684-3401).

the largest study yet to demonstrate the effectiveness of mismatched adult immune-system (blood) transplants. “If we look at the reasons that transplants fail patients,” says Rizzieri, “it’s because of either relapse, infection, or not having donor matches.” And as the success of mismatched transplantation improves, “you broadly expand those who have a donor to include almost everyone,” he says. “That, combined with a well-tolerated preparative regimen for transplant, would significantly decrease the toxicity of the approach—and allow us to offer this therapy to patients who otherwise wouldn’t have a meaningful chance of cure.”

clinic at Duke that will both treat CLL patients and help sort out what genes are involved in the development of the disease.

From a research perspective, Friedman says that because CLL is such an indolent disease in many patients, it’s an excellent model to study genetically. “Patients live for a long time, often without needing aggressive therapies. They come in again and again, so we can take repeated samples and look at how things change”—because the initial genetic trigger of CLL in a patient may not be what promotes tumor cell survival

cancer-causing gene mutations such as that of BRCA-1, which have a high “penetrance”—meaning that if you have the mutation you are highly likely to develop the disease in your lifetime—CLL seems more likely to be the result of an unruly set of low-penetrance genes.

“There are probably five or 10 genes that are involved,” says Lanasa, “but you need lots of families to figure this out for sure.”

Lanasa and Friedman’s work is a continuation of their fellowship research, which they both completed last year under J. Brice Weinberg. Their new clinical initiatives, like those of

A better watch-and-waiting game

For patients with aggressive, quickly fatal malignancies such as multiple myeloma, clinical trials can offer promise where previously there was none. For patients with less aggressive cancers, such as chronic lymphocytic leukemia (CLL), this new wave of genomic clinical trials helps refine both treatment options and the decision of whether to treat at all.


CLL is one of the most common leukemias, and according to several studies it is one of the most strongly heritable diseases period. Survival of CLL patients ranges wide, and in many cases patients can live for years before symptoms or disease progression mandates treatment. Oncologists Daphne Friedman, MD, and Mark Lanasa, MD, PhD, are building a CLL

during the course of treatment or in cases of relapse. Understanding how the disease changes genetically will help physicians choose therapies wisely for CLL patients. “There are about five drugs that could be applied to CLL patients,” says Friedman, “but there aren’t a lot of ways to forecast which one—if any—is likely to have an effect.” Also, she says, understanding changes in oncogenesis can have a significant impact in many other types of cancer.

Lanasa treats patients in the CLL clinic and also collects data—from both the patients and their families. He is part of a national collaboration gathering data from families with high incidence of CLL to help sort out what group of genes causes the cancer. Unlike

Dave, Beaven, Gasparetto, Rao, and Reya, illustrate how the journey of potential new therapies from laboratory bench to bedside is growing steadily shorter. For some patients this offers new hope for effective treatment. But Lanasa says that even for patients whose cancer is being followed but not treated, clinical studies can provide a much-needed mental benefit. “Watching and waiting can be frustrating; it can feel passive to people,” he says. “When patients can participate in clinical trials, it’s something active they can do about their disease.” □

To learn more about Duke hematologic malignancy clinical care and current clinical trials, please call 919-684-8964.



by Jeni Baker
photography by Jared Lazarus

Sound plans

Duke's new Hearing Center wants to turn up the volume
for millions who suffer from hearing loss



Rachael Ragin was 45 years old before she knew that fizzy soda bubbles make noise. Profoundly hearing-impaired from infancy, Ragin, of Cary, North Carolina, successfully navigated the hearing world for years with the help of two powerful hearing aids, despite being able to understand only 8 percent of the words spoken in a soundproof auditory booth. But when she entered college, her hearing deficit became increasingly difficult to overcome.

“My hearing was so bad that in addition to wearing hearing aids, I learned sign language and started relying on an interpreter,” which she did for the next two and half decades, Ragin says. The mother of two was in her early 40s when she began investigating cochlear implants, the only auditory prosthetic devices proven effective for treating severe hearing impairment and deafness.

In 2003, Ragin underwent cochlear implant surgery, performed by Duke

neurotologist Debara L. Tucci, MD. Within several weeks, Ragin’s hearing comprehension had soared to 95 percent.

“The world became magical with all the sounds it made,” Ragin says. “Being able to better communicate with my family, hearing the wind in the trees, listening to rain fall...it was thrilling.”

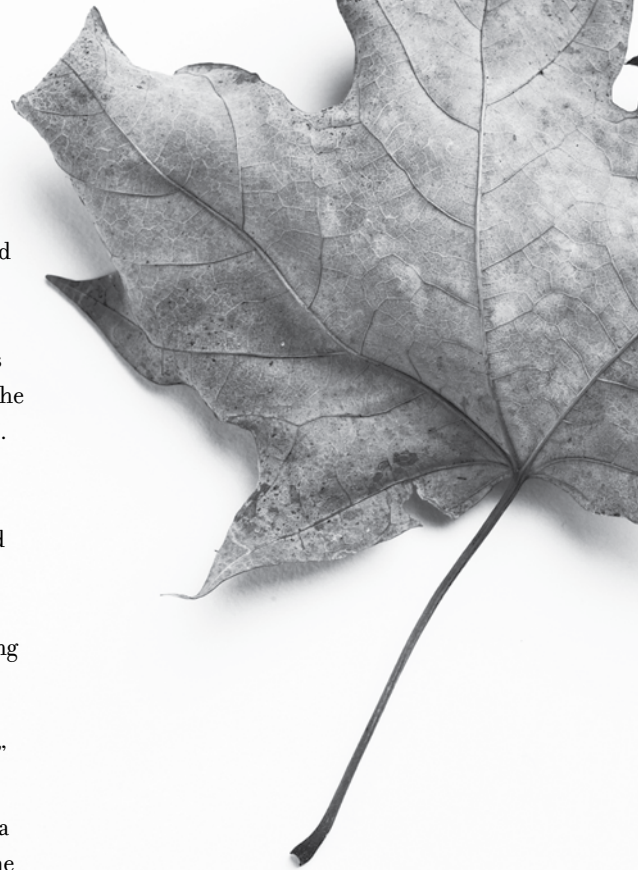
While Ragin says the decision to use auditory prostheses is a personal one—and that she, like many of the two million Americans who are deaf or profoundly

hard of hearing, continues to take great pride in deaf culture—she is delighted to have opted for cochlear implantation.

“I live and work in a hearing world,” says Ragin, a doctoral-level consultant who works with deaf and hearing-impaired children for the North Carolina Department of Public Instruction. “My implants allow me to negotiate that world as well as I do the deaf world.”



“Sound and communication are at the core of human society, and people with profound hearing loss often struggle to be a part of that—particularly children, who rely on effective communication to learn,” says Rachael Ragin. A consultant who works with deaf and hearing-impaired children in North Carolina public schools, Ragin received cochlear implants at Duke in 2003.



“A FLAT MIRACLE”


The cochlear implant is arguably the most significant advance to date in the treatment of hearing loss—a widespread condition that the World Health Organization consistently ranks among the top 15 medical concerns in terms of human suffering and economic cost. In the United States, about 10 percent of the population is deaf or hard of hearing, with some 28 million people—about half of them aged 65 and older—experiencing hearing loss significant enough to impact their quality of life.

“Thirty years ago, there were no options, simply no treatments, for someone who was deaf or had a severe hearing loss,” says Duke-trained electrical engineer Blake S. Wilson, an adjunct professor in otolaryngology who also serves as the chief strategy advisor for MED-EL GmbH of Innsbruck, Austria, a leading developer and manufacturer of cochlear implants. Wilson has been associated with Duke

otolaryngology since 1984, when he and Duke otolaryngology chief emeritus Joseph C. Farmer Jr., MD, established the Duke Cochlear Implant Program as one of the nation’s first. Tucci has led the program since coming to Duke in 1993.

“Cochlear implants have enabled us to come a very long way in a relatively short time in terms of treating profound hearing loss,” says Wilson. “Most of today’s implanted patients can understand everyday speech with hearing alone, without lip reading—many in noisy environments, some even on the telephone. To me, that’s a flat miracle.”

While technological advances have opened a new world of sound for many, a host of challenges remains. Not everyone with hearing loss is a candidate for cochlear implants, and outcomes vary widely among recipients—for reasons that aren’t fully understood. And for many millions of children and adults worldwide, affording or



“Cochlear implants have enabled us to come a very long way in a relatively short time in terms of treating profound hearing loss. Most of today’s implanted patients can understand everyday speech with hearing alone, without lip reading—many in noisy environments, some even on the telephone. To me, that’s a flat miracle.”

— BLAKE S. WILSON



even accessing the technology remains out of the question.

Not all people with profound hearing loss consider it a disability; many people who were born deaf or severely hard of hearing—or who became so early in life—find deep fulfillment and great pride in deaf culture. But for many others with untreatable or undertreated hearing loss, the economic and emotional costs can be enormous. For those who became deaf before they learned to speak, experts estimate a lifetime cost of more than \$1 million per person to address hearing-related challenges. Many of these people say their hearing deficit makes them feel disconnected, socially isolated, and discriminated against.

On January 29, Duke's efforts to help these individuals were galvanized in a new way with the official launch of

the Duke Hearing Center. This major interdisciplinary initiative is designed to harness Duke's scientific and clinical strengths to alleviate the massive global toll of hearing loss.

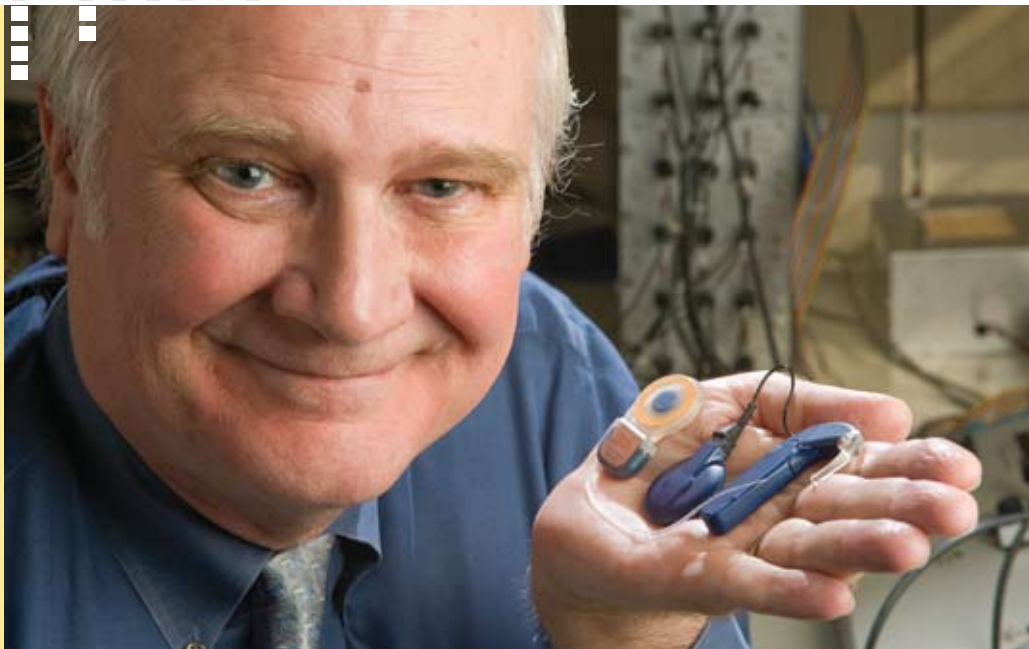
SYNTHESIZING THE SCIENCE

Part of the plan for the new center, says Wilson, is to take advantage of an "explosion of knowledge" that's occurred in the fields of otology, neurotology, and engineering, particularly in the past 10 years.

"Duke has awesome resources and capabilities across the spectrum needed to develop new treatments for hearing loss, and we're highly unusual in that respect," Wilson says. "The combination of all these capabilities is what's so powerful, and a large part of the rationale for the hearing center is to bring that strength to bear on such an important societal problem as hearing loss."

Co-directed by Tucci and Wilson, both of the Department of Surgery's Division of Otolaryngology-Head and Neck Surgery (OHNS), the center will foster collaborations among faculty within the School of Medicine, the Pratt School of Engineering, the Duke Center for Cognitive Neuroscience, the Division of Neurology, the Duke Global Health Institute, and the Duke Institute for Genome Sciences & Policy.

"It's very important for investigators at Duke to work on solving problems that have a major patient impact, and the center's multidisciplinary approach will be critical to this effort," says Nancy Andrews, MD, PhD, vice chancellor for academic affairs and School of Medicine dean, who granted the program "center" status in July. Andrews herself has a personal interest in otology, and recently made a serendipitous discovery of a



Blake Wilson, co-director of the Duke Hearing Center, is internationally recognized for developing cochlear implant components.

gene in mice that may play a role in determining how genes are expressed in developing inner-ear cells in humans.

"Hearing loss is a large problem, but it's one for which we have real hope that modern science will lead to solutions," she says. "Many causes of hearing impairment are preventable, and understanding those will help in the short term. In the long run, scientific investigation will eventually help people preserve their hearing."

For example, says Wilson, "about 60 percent of congenital hearing loss is caused by genetic defects, and there's huge potential to identify additional defects that lead to hearing loss and develop molecular repairs for them."

Another area of investigation the center plans to pursue is cellular-regeneration therapies, which take a cue from the animal kingdom—some aquatic animals and birds regenerate their damaged inner-ear

receptor cells with the help of nearby cells that act as stem cells.

"We hope to build upon a rapidly growing body of knowledge to better understand the biology of the mammalian inner ear, with the goal of inducing hair-cell and neural regeneration and thereby restoring hearing," Tucci says. "This field of cell biology holds great promise for the treatment of sensorineural hearing loss, for which there is no direct treatment at present."

IMPROVING THE IMPLANT

In addition to pursuing basic-science and translational research, center faculty will work to improve existing treatments for hearing loss, including the groundbreaking cochlear implant. Much of this work will build upon a longtime collaboration between OHNS and the Research Triangle Institute (RTI) Center for Auditory Prosthesis Research—which

Wilson, who is internationally recognized for inventing many implant components, led from 1994 to 2002. This partnership has produced a number of breakthroughs in cochlear implant design, as well as the signal- and speech-processing strategies used in cochlear implants, hearing aids, and other devices used to improve hearing.

More than 130,000 people worldwide have received cochlear implants since they became widely available in the early 1980s—and thanks to constant improvements in the devices, many more people now stand to benefit from them than ever before. In fact, says Tucci, "In our state alone, many, many people are candidates and don't know it." Many insurers now cover at least one implant—including Medicare and, for children, Medicaid—and there are no real age restrictions for getting them, she adds. Although about a third of the division's



Balancing act

Unique in the state, Duke's new Vestibular Disorders Clinic helps patients with vertigo and other inner-ear disorders

IF YOU SOMETIMES DON'T KNOW which way is up, you're not alone. More than seven million times a year, Americans seek medical attention for dizziness. Thirty percent of people will experience at least one bout of vertigo by age 65. Whether acute or chronic, these conditions are both common and debilitating.

The Duke Vestibular Disorders Clinic, a clinical component of the new Duke Hearing Center, is here to help. Led by neurotologist

David M. Kaylie, MD (left) leads the Duke Vestibular Disorders Clinic

patients are children from one to 18 years old, “we’ve implanted patients as old as 86 who have done very well,” Tucci says.

However, Wilson points out, there’s still much work to be done to help cochlear implantation reach its true potential—and transform the lives of even more deaf and hearing-impaired people.

Unlike hearing aids, which amplify sound so it is loud enough for damaged ears to hear it, cochlear implants reroute sound around damaged parts of the ear, directly to the auditory nerve, which stimulates the area of the brain that receives and makes sense of auditory input. At present, the best candidates for cochlear implants are young children and people whose auditory brains have received at least some ongoing stimulation—such as those who regularly wear hearing aids. That’s because connections among neurons and auditory pathways erode as the brain

is deprived of input, and it’s easier to successfully establish or re-establish ear-brain connections when they haven’t been idle for a prolonged period.

Hearing Center researchers will explore ways to overcome that obstacle, and also address the differences in outcomes among recipients, which Wilson says are still not completely understood. “A leading theory [as to why implants work better for some people than others] is that it’s due to individual differences in auditory brain function,” which can vary widely among people who have suffered from different degrees of hearing loss for different lengths of time.

“The brain is the tail that wags the dog in determining cochlear implant outcomes,” he says, “and we need to figure out why and what we can do about it.”

Because hearing-impaired people who are not candidates for cochlear



David M. Kaylie, MD, the program evaluates and treats children and adults suffering from dizziness, vertigo, poor balance, and other inner-ear conditions, both suspected and confirmed.

These conditions include:

- Meniere’s disease
- Acoustic neuroma
- Autoimmune inner ear disease
- Benign paroxysmal positional vertigo
- Labyrinthitis and vestibular neuritis
- Mal de débarquement
- Perilymph fistula
- Superior canal dehiscence
- Migraine-associated vertigo

“People with these conditions often suffer for years—and see many doctors—before they get some resolution,” Kaylie says. “We specialize in diagnosing the underlying causes of their symptoms and offering patient-tailored treatments.”

The state-of-the-art facility offers a full array of testing and diagnostic services, and employs three sophisticated techniques to evaluate the physiological and functional status of patients’ vestibular systems: electronystagmography (ENG/caloric testing), rotary chair testing, and vestibular-evoked myogenic potentials (VEMP). The service also offers rehabilitative care to patients likely to benefit from it.

For more information, call [919-684-6968](tel:919-684-6968).

implantation can benefit significantly from other devices, Hearing Center faculty will also work to improve auditory prostheses across the board, says Wilson. These devices include hearing aids and the hearing aid-cochlear implant hybrid—both for people with some residual hearing—as well as the central auditory implant (CAI), a device, still in the early stages of development, that is designed to stimulate brain structures central to the auditory nerve.

ADDRESSING A GLOBAL CRISIS— AT HOME AND ABROAD

To speed the delivery of these advances in technology and research to the people who need them, Duke Hearing Center faculty plan to grow a statewide network of sites for clinical trials and patient care.

“One of our overarching goals is to integrate clinical research with treatment,” says Tucci, who is currently working with David L. Witsell, MD, director of the Duke Voice Care Center, on an NIH grant to develop a network of clinical research sites within academic centers and community-based private practices. “The idea is to see which interventions work best in treating patients with otologic disease—and for the Duke Hearing Center to have a presence in most North Carolina communities in the next five to 10 years.”

But the Hearing Center’s vision extends far beyond North Carolina. Tucci explains that the center’s mission includes fighting hearing impairment globally, where it may be an even greater problem than in the United States. Roughly 60 million people in India suffer from significant impairments

in hearing, for example, many due to congenital rubella—which is preventable by vaccination. And in China, more than seven million people are completely deaf, an incidence due largely to widespread use of ototoxic over-the-counter antibiotics administered by the “barefoot doctors” during the country’s cultural revolution.

As part of a partnership between the Department of Surgery’s Global Health Initiative and the Duke Global Health Institute, Tucci and Wilson have traveled to India to investigate opportunities for clinical outreach and research collaboration. They also are working with Samuel L. Katz, MD, internationally known chairman emeritus of the Duke Department of Pediatrics, to create an infrastructure to prevent and treat hearing loss in India.



Although about a third of Duke cochlear implant patients are children, “We’ve implanted patients as old as 86 who have done very well,” says neurotologist Debara Tucci, MD. “In fact, in our state alone, many, many people are candidates and don’t know it.”



“We’re working with [our counterparts] there to establish rubella vaccine and hearing screening programs, to facilitate the care people need, and to make low-cost cochlear implants accessible to patients who are candidates for them,” Tucci says.

Whether it affects a child in an impoverished nation, a middle-aged American professional, or Grandma, smiling as her family shares stories around the holiday dinner table, not hearing a word, “hearing loss can be isolating and tragic, and that’s the real impetus for creating the Duke Hearing Center,” Tucci adds. “By bringing together researchers in many areas related to hearing science and hearing health care and working to broaden our clinical outreach in the community, in the U.S., and globally, we will be able

to make a tremendous difference in many people’s lives.”

Rachael Ragin is living proof of that. “Sound and communication are at the core of human society, and people with profound hearing loss often struggle to be a part of that—particularly children, who rely on effective communication to learn,” Ragin says. “I truly believe that efforts to reduce the prevalence and the impact of hearing loss are efforts to diminish a serious human-rights concern.” □

To learn more about the Duke Hearing Center, visit hearing.surgery.duke.edu and dukehealth.org/hearingcenter.

To make a referral, call the Duke Consultation and Referral Center at 1-800-MED-DUKE (1-800-633-3853).

“By bringing together researchers in many areas related to hearing science and hearing health care and working to broaden our clinical outreach in the community, in the U.S., and globally, we will be able to make a tremendous difference in many people’s lives.” — DEBARA TUCCI, MD

Rationing health care: Why we shouldn't always get what we need

BY GOPAL SREENIVASAN, PHD



Health care reform has been debated for decades, but an ailing economy, aging population, and new administration are bringing a renewed sense of urgency to the discussion of how to manage the costs and provision of health care in the United States. Bioethicist Gopal Sreenivasan, PhD, asserts that a seemingly severe approach—rationing—is not only part of a workable solution, but a moral duty.

Most people believe that health care systems should ideally provide citizens who are sick with whatever health-related goods and services they need. While this model may appear at first glance to be the equitable way to meet people's health care needs, it is not really morally defensible on a national scale.

This is because a nation's health is not the only important good with a claim to the finite pool of social resources—there are also education, defense, transportation, and infrastructure, to name just a few others. The more society allocates to health-related goods and services, the less it can allocate to anything else.

In other words, when access to every medically necessary good and service leads to overspending on health care, a country is forced to underspend on schools, roads, and other critical services. This is incompatible with justice, which forbids robbing Peter to pay Paul.

Countries are therefore morally obligated to observe a strict limit on health care spending. In effect, they must fix a ceiling on their annual health care budgets before knowing the total cost of the medically necessary care required by their population over the year. By supporting

this approach, a nation commits itself to rationing the health care goods and services it provides its citizens.

Building the case for rationing

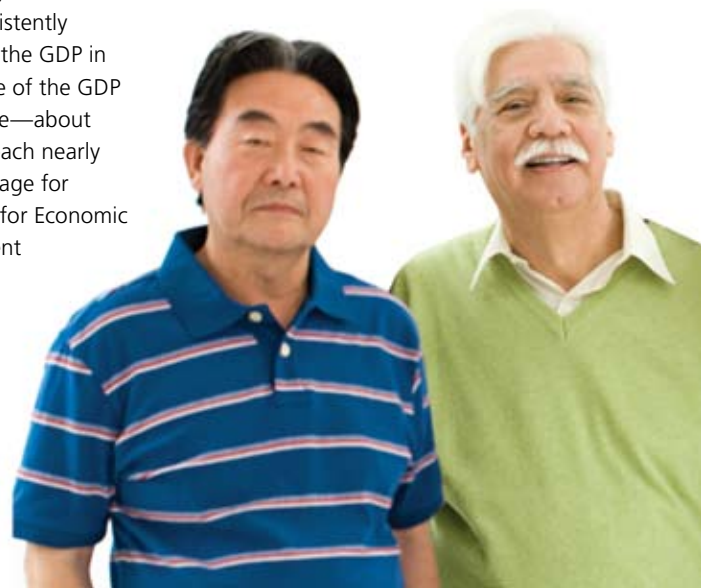
Since rationing means that citizens will be denied some medically necessary care, people are often understandably uncomfortable with this notion. Most don't want to say it's acceptable to withhold health care benefits or to settle for anything less than what is, at least in principle, possible. It seems uncompassionate, even unfair.

Still, the evidence is clear and mounting that we must set limits on health care expenditures. Already, the United States spends more on health care—both absolutely and as a percentage of the gross domestic product (GDP)—than nearly every other country by far.

Even worse, in America, the growth rate of medical spending has consistently surpassed the growth rate of the GDP in recent years. In fact, the share of the GDP the U.S. spends on health care—about 16 percent—is projected to reach nearly 20 percent by 2017. (The average for countries in the Organisation for Economic Co-operation and Development is 9 percent.)

When the percentage of GDP spent on health is rising, that means that health care spending is gobbling up resources that were previously spent on other goods. As long as the growth rate in health care spending outstrips the growth rate in GDP itself, this diversion of resources from other legitimate expenditures only gets worse. At current growth rates, health care spending will eventually cross the line into claiming resources that should be spent on other goods, no matter where you draw that line. Since it is difficult to defend a more-than-15-percent share of GDP designated for health care, that line may have already been crossed.

Of course, it's hard to suppress the thought that if only we could eliminate all the waste and inefficiency in the



The opinions expressed in "Controversies in Medicine" are those of the author and do not necessarily reflect those of Duke Medicine as a whole.

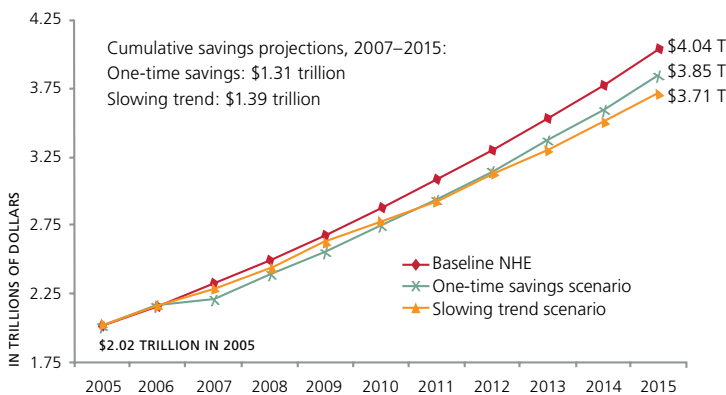
“A nation’s health is not the only important good with a claim to the finite pool of social resources—there are also education, defense, transportation, and infrastructure, to name just a few others.”

health care system, we really could have it all—and not have to settle for rationing medically necessary services. Yet while every little bit helps, it’s highly unlikely that improving efficiency and eradicating waste would allow us to cover everything, as the chart below makes clear.

The three lines represent projections of health spending under different assumptions about possible cost savings. The top line (baseline national health expenditures) projects current growth trends without any cost savings. The

“one-time savings scenario” assumes significant initial savings (e.g., from eliminating waste), but no change in the underlying growth trend. The “slowing trend scenario” assumes the reverse: no significant initial savings, but a smaller underlying growth rate. Even the best-case scenario (slowing trend) has health care spending almost doubling between 2005 and 2015. That is because new technology, rather than waste or inefficiency, is the fundamental driver of growth in health care spending.

Growth in national health expenditures (NHE) under various scenarios



Source: The Commonwealth Fund; Data from C. Borger et al., “Health Spending Projections Through 2015: Changes on the Horizon” *Health Affairs* Web Exclusive (Feb. 22, 2006):w61-w73.

Due to the constant introduction of new technologies, our nation’s expenditures on health care are projected to grow at a prodigious pace, even if we eliminate inefficiencies from the health care system or see a slowing rate of growth in health-care costs. The only feasible way to hold down costs is to ration health care.

Asking the tough questions

But how do we decide where to cut costs? The first step is to establish a firm limit on health care spending that is independent of (and less than) what is technically possible to spend on health care, even when spending is restricted to medically necessary services and all waste is eliminated. However, this does mean accepting that some medically necessary and beneficial services will not be covered, because we cannot reasonably afford it.

The next step is to develop adequate measures of the comparative cost and effectiveness of different effective medical interventions. The goal would be to have a rational and accountable method of deciding which interventions are most worthwhile to cover with a limited budget and which ones, regrettably, must be left out. But this is another topic for another day.

The questions of how to ration health care, and how much care we as a country can reasonably afford to pay for, will not be easy to answer. But accepting rationing as a necessary and moral approach remains the first step toward resolving those questions—and creating a more just health care system. □

Gopal Sreenivasan, PhD, is the Lester Crown University Professor of Ethics and a professor of philosophy in Duke’s Trent Center for Bioethics, Humanities, and History of Medicine (csmeh.mc.duke.edu). His research in bioethics largely focuses on the broad notions of health and justice.



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Emerson Gift Supports a Future Nurse



John Emerson has created a scholarship for oncology nurses. His wife, Nancy, in the background photo, was a Duke cancer patient, fundraiser for the Duke Comprehensive Cancer Center, and a dedicated volunteer with Duke's Cancer Patient Support Program.

Nancy Emerson fought breast cancer for 21 years. And her husband, John Emerson, was by her side every step of the way.

Nancy was one of the first volunteers with Duke's Cancer Patient Support Program and chaired its board. She and John befriended hundreds of patients, nurses, and doctors at the Duke Comprehensive Cancer Center over the years.

Nancy lost her hard-fought battle five and a half years ago, but it wasn't long before John found himself drawn back to Duke and to helping people struggling with cancer. He comes every Thursday, with a warm smile and the trademark bananas that he shares with patients and families in the waiting room of Duke's Morris Cancer Clinic.

Giving of themselves just came naturally to both Emersons, and John says he "tumbled around several ideas" before he decided on a meaningful way to leave a lasting legacy of his own at Duke.

"There are so many areas at Duke that you could contribute to—the research they are doing is a great thing. But nurses meant so much to Nancy and to me. They contribute so much to the healing process—I hold them very dear to my heart," says John.

His legacy gift will support future nurses with preference given to students who plan a career in oncology nursing. Emerson has given \$100,000 for a nursing scholarship, which will be matched by the Duke Financial Aid Initiative for a total of \$200,000.

Emerson says he looks forward to meeting the student who receives the first funds from his endowment this fall.

"There's a genuine need for new nurses," he says. "It's an honorable profession, and I hope this helps someone who will become a good oncology nurse." —*Marty Fisher*

Holt Honors Sister's Selfless Spirit with Nursing Scholarship Endowment

Trela Christine Holt was the type of nurse who would do whatever she could to help people, no matter where or when, according to her older brother Terrance "Terry" K. Holt.

"One time I was traveling with her on an interstate and someone had pulled over and couldn't get their car started," he remembers. "Trela volunteered to keep their dog for a day until they got their car fixed. She was that kind of person—she never hesitated to help someone."

Trela enjoyed a successful and varied nursing career working as a Life Flight nurse, a hyperbaric nurse, a prison nurse, an ICU nurse, and a nursing teacher.

"She was kind of out there and always doing something that was not your classic run-of-the-mill nursing," says Terry, 53. "She did a lot of state-of-the-art stuff."

When Trela lost a six-month battle with pancreatic cancer on Thanksgiving Day 2006 at the age of 48, Terry vowed to honor his sister's unwavering selflessness and giving spirit in some way.

Despite that his sister never attended the Duke University School of Nursing (DUSON), Terry and his wife Virginia chose to give \$250,000 to the school to establish The Trela Christine Holt School of Nursing Scholarship Fund. With 100 percent matching funds from the school's Financial Aid Initiative, the fund will launch this spring with an initial \$500,000 endowment.

"This is a way for me to promote the quality, state-of-the-art nursing education that she would have enthusiastically endorsed," Terry says. "It's a donation to her legacy of never hesitating to help others no matter what the circumstances."

The fund will provide full or partial scholarships to students enrolled at DUSON with preference given to candidates first from the state of Tennessee, then to those from Illinois. The Holt family has roots in Tennessee and a strong presence in Illinois. Terry is president of Red Barn Investments of Northbrook, Ill., the firm that manages the Holt family estate.

Terry is a former member of the Duke Medicine Board of Visitors and in the past has given money to Duke Medicine for Parkinson's disease research. He and Virginia have a daughter, **Amanda, T'07**, who graduated from Duke with a degree in public policy.

"I've had many positive experiences working with Duke," he says.

In addition to Amanda, Terry and Virginia Holt have a daughter Laura—a sophomore at the University of Denver; and twins John and Jenna—both high school sophomores. The family lives in Kenilworth, Illinois. —*Jim Rogalski*

Gorrie family supports AIDS research partnership in Tanzania

Thomas M. Gorrie, PhD, says the sustainability and multidisciplinary approach of Duke's partnership with Kilimanjaro Christian Medical Center (KCMC) in Moshi, Tanzania, is what led his family recently to gift the program with \$500,000 in operating support.

For more than a decade, the unique partnership, now supported by the Duke Global Health Institute, has conducted significant research on AIDS, tuberculosis, and other diseases in Tanzania, helped build a child-centered family care clinic, developed international laboratory standards, and improved the information technology infrastructure.

The program provides advanced medical care and training to people in Tanzania—including several young professionals who have gone on to complete postgraduate degrees in the U.S. and U.K.—as well as research and education opportunities for Duke faculty, graduate and undergraduate students, medical residents, and fellows. In addition to medicine, participants represent many different areas of expertise at Duke, including public policy, engineering, business, divinity, and arts and sciences.

"This model works anywhere, whether it's in Africa or Durham, North Carolina," says Gorrie. "It's a great way to extend the reach

of Duke's multidisciplinary knowledge and expertise—it's good for people in resource-poor areas, and it's good for Duke."

Gorrie, a Duke University trustee, chair of the Duke University Health System Board of Directors, and honorary member of the Duke Medicine Board of Visitors, spent more than 33 years at Johnson & Johnson and retired in March as vice president for government affairs and policy.

The program is under the direction of Duke Assistant Clinical Professor John A. Crump, MD. John Bartlett, MD, a Duke professor in infectious diseases, has served as the faculty liaison over the past four years. Among many important research findings to come out of the partnership, Bartlett cited one that has close ties to North Carolina. Using a new blood-plasma pooling technique pioneered at UNC-Chapel Hill, Duke and KCMC researchers became the first to diagnose and treat HIV infection in a pregnant woman who contracted the virus during her pregnancy.

The early diagnosis allowed doctors to act quickly to protect the health of the mother and avoid transmitting the virus to her child.

"The Gorrie family has given us the gift of stability," says Bartlett. "We are enormously grateful."



Eye Center auditorium named to honor Roz and Milton Lachman

Milton and Roslyn Lachman, longtime volunteers and benefactors of Duke University Medical Center, Duke University, and the Duke Eye Center, have donated a gift to name an auditorium and lobby in the Albert Eye Research Institute at Duke. Roslyn Lachman



is an alumna of Duke University, and the couple has served on the volunteer boards of the Eye and Heart Centers, as well as the Duke Medicine Board of Visitors. In 2007 they received the Duke Medical Alumni Association's

Distinguished Service Award, and they have hosted the Duke Medicine Palm Beach Forum for 14 years. The Lachmans are principals of the Lachman Group, a real estate, investment, and development company, and they live in Palm Beach, Florida, and Vancouver, British Columbia.

Gratitude for a granddaughter's care

Addison Bledsoe celebrated her first birthday on Halloween. She's "quite the little beauty" and is learning to walk and talk, according to her grandparents, Eric and Rebecca Hinshaw. But just a year ago this past December Addison's survival was touch and go. At age five weeks, she caught a very bad cold. Her six-pound body was not able to clear the fluid from her lungs, and she wound up in a Charlotte, North Carolina, hospital on a ventilator.

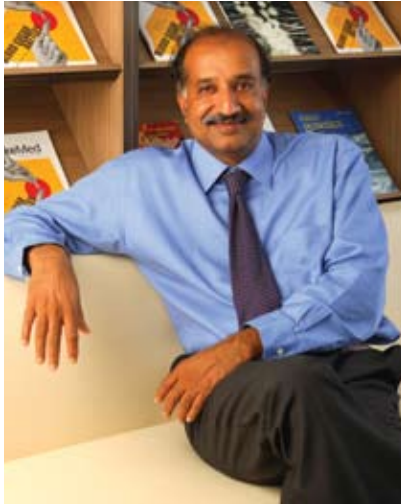


"She had very little breathing capacity. She was going downhill quickly, even with oxygen," says Rebecca, a former neonatal nurse.

It was a windy day and Duke's helicopters were unable to land in Charlotte, so Addison was carefully transported to Duke Children's by ambulance. She spent the next three weeks, through Christmas and New Year's, in Duke University Hospital's pediatric intensive care unit.

Eric Hinshaw, chairman and CEO of Kingsdown mattress company in Mebane, North Carolina, has been a benefactor of Duke Children's for more than 15 years, serving on the Children's National Board of Advisors and sponsoring company fundraising events for the Children's Miracle Network.

In honor of Addison, the Hinshaws and Kingsdown recently made a commitment to provide \$225,000—\$75,000 a year over three years—to support a Duke pediatric fellow. The fellow, Brian Tinch, MD, is conducting research on pediatric pulmonary diseases, including RSV, the condition Addison suffered. "We are very lucky to have what I consider to be one of, if not the, premier children's institutions in the country in our community, the community where the employees of my company live," says Hinshaw. "No matter how grave or how minor the situation, they give their patients the same amount of love and expert care."



A new dean in Singapore

The Duke-NUS Graduate Medical School Singapore announced the appointment of **Ranga Krishnan, MB ChB**, as its new dean in July. He previously held the title of executive vice dean. Krishnan succeeds R. Sanders Williams, MD, senior vice chancellor for academic affairs at Duke and the founding dean of Duke-NUS.

"I am honored to accept the position," says Krishnan. "I believe the school has the potential to become the preeminent leader in the region for the training of physician-scientists and the conduct of significant clinical and basic research." Krishnan will focus on creating an MD/PhD program to be available in the next two years, as well as a research PhD program. He will also continue to chair the

Department of Psychiatry at Duke University Medical Center.

"This is a rare opportunity to help establish a legacy of excellence and progressive medical education in the new era of technology," says Krishnan. "Methods of teaching and learning are very different today than they ever have been before. And building a modern medical education system that, from the start, includes all of the new tools, technologies, and strategies, can be a model that other medical schools might be able to learn from."

"Dr. Krishnan has done an outstanding job over the past year as executive vice dean, and I believe he is the ideal person to guide Duke-NUS through its formative years and beyond," says Tony Chew, chair of the Duke-NUS governing board.

"NUS would like to thank Dr. Williams for his invaluable contributions in helming Duke-NUS during its formative years," says National University of Singapore president Shih Choon Fong. "Building on the strong foundations laid by Dr. Williams, we are confident that Dr. Krishnan will lead Duke-NUS to another level of excellence that will strengthen Singapore's standing as a hub for medical education and research and health care."

More from Singapore

Other appointments announced by the Duke-NUS Graduate Medical School Singapore in recent months included the naming of **David Matchar, MD**, as director of health services research and **Augustus John Rush, MD**, as vice dean, clinical sciences.

Matchar, who also serves as a professor of medicine and director of the Center for Clinical Health Policy Research at Duke, will develop the school's signature research program in health services research and also oversee the Lien Center for Palliative Care—a collaboration involving Duke-NUS, Lien Foundation, National Cancer Center Singapore, and SingHealth Group to promote better practices in the care of the dying.

Rush, formerly professor and vice chair in the Department of Clinical Sciences at the University of Texas Southwestern Medical Center, is an internationally renowned clinician-scientist and mentor who has developed innovative programs for clinical research.

Also joining Duke-NUS as associate dean for research is **Shirish Shenolikar, PhD**, adjunct professor of pharmacology & cancer biology. He is a former vice chair of Duke's Department of Pharmacology and Cancer Biology.

Learn more at duke-nus.edu.sg.

Strategic leadership for DUHS

William J. Fulkerson Jr., MD, previously chief executive officer of Duke University Hospital, was promoted to the position of senior vice president for clinical affairs for the Duke University Health System (DUHS) effective July 1. In this new role, Fulkerson implements the health system strategic plan that focuses on growth, alignment, and efficiency. He is responsible for driving integration and alignment between ambulatory services and hospital-based services across Duke University, Durham Regional, and Duke Raleigh hospitals, as well as the physician practice plan.

In this reorganization, Paul Newman, in his DUHS role as vice president for ambulatory services, now reports to Fulkerson. In addition, clinical department chairs are accountable to Fulkerson in

their roles as chiefs of their respective clinical services in the health system, as will the CEOs of the three hospitals.

This new structure enables Fulkerson, Victor J. Dzau, MD, chancellor for health affairs and CEO of DUHS, and Nancy Andrews, MD, PhD, dean of the School of Medicine, to work together as an effective and efficient team that will have more clearly focused responsibilities and enable more strategic and nimble decision-making in relation to the clinical and academic enterprises.

Kevin Sowers, RN, chief operating officer for Duke University Hospital, is serving as interim CEO for Duke University Hospital as the search for a permanent successor continues.



Ravin named first PDC president

Following a yearlong national search, **Carl E. Ravin, MD**, chair of the Department of Radiology, was appointed the first president of the Private Diagnostic Clinic PLLC. He assumed the role in January.

As PDC president, he will, among other things, work in collaboration with Victor J. Dzau, MD, chancellor for health affairs and CEO of Duke University Health System (DUHS); William J. Fulkerson Jr., MD, senior vice president for clinical affairs; and Nancy Andrews, MD, PhD, dean of the School of Medicine, on strategic priorities. Ravin also will work with them to help focus on and address organizational challenges and participate in such things as clinical department reviews.



The PDC had a number of outstanding candidates for the position, says Mark Newman, MD, chair of the Department of Anesthesiology and chair of the PDC board of managers. According to Newman, Ravin was the board's

ideal choice to advance the Duke physician practice and develop a greater PDC partnership with DUHS and the Duke University School of Medicine in defining and implementing a strategic vision for the future.

"We are entering a historic and important time that will require an organizational priority toward partnership, action, and pursuit of excellence unlike any other in our history," says Newman. "I am excited and optimistic about the direction in which we are headed and look forward to working with Carl to further establish Duke and the PDC as the place where the best physicians in the world come to practice, teach, and do research."

Dzau praised Ravin as "a highly effective and respected chairman for the Department of Radiology [and] an important leader for the school over many years."

"We are looking forward to working closely with Dr. Ravin in this position to further align PDC operations with those of the health system and the School of Medicine," says Dzau.

Williams to advise on international strategy

R. Sanders "Sandy" Williams, MD, senior vice chancellor for academic affairs at Duke University and one of the principal architects of the Medical Center's global expansion in recent years, will take on the additional role of senior adviser for international strategy for the university. In this new position, Williams will serve as Duke's chief adviser for university initiatives outside the United States and will be a counselor to Duke University President Richard H. Brodhead, PhD, and Provost Peter Lange, PhD.

In making the announcement, Brodhead said, "Duke has expanded its international reach dramatically in the last decade. Building on this base, we now seek to create

partnerships to share the benefits of Duke's teaching and research around the world. There is no one more knowledgeable about Duke's opportunities than Sandy, and he will be a critically important adviser as we identify and assess the choices that will best advance us toward this goal."

Williams was named senior vice chancellor for academic affairs in 2007. He previously served as dean of the School of Medicine and founding dean of the Duke-NUS Graduate Medical School Singapore, Duke's most complex and wide-ranging international venture to date.

"Duke's global ambitions are reflected in every part of our campus, from teaching

to research to public service," says Williams. "I look forward to working with President Brodhead, Provost Lange, our deans, and faculty to advise the university in what will be a major and significant transformation of our mission."

"We are fortunate at Duke Medicine to have an executive as energetic and visionary as Sandy Williams," says Chancellor for Health Affairs Victor J. Dzau, MD. "Through Sandy, Duke Medicine welcomes the opportunity to coordinate with the university in international initiatives."



Buckley named permanent vice dean

Edward Buckley, MD, professor of ophthalmology, was named Duke University School of Medicine's vice dean for medical education in October. Buckley was interim vice dean for the prior 24 months. He will continue to be responsible for the educational quality of the medical doctor, physician assistant, pathologists' assistant, and doctor of physical therapy programs.



"Dr. Buckley has done a superb job, and I feel fortunate that he will continue to be part of our team," says medical school dean Nancy Andrews, MD, PhD. Buckley will also continue to oversee the

admissions and curriculum offices, student affairs, medical center library, and anatomical gifts. Since 2002, he has been involved in developing and maintaining the medical school curriculum through his roles as chair of the curriculum committee, associate dean for undergraduate medical education, and as a member of the admissions executive committee.

Carpenter to lead oncology services

Carolyn Caulfield Carpenter was named to the newly created position of associate vice president, Oncology Services, for the Duke University Health System (DUHS) in October. In this new role, Carpenter will have responsibility for strategic growth plans across oncology service lines, integration of system-wide oncology services and operations in both acute care and ambulatory settings, and management and oversight of all system-wide oncology operations and services. Carpenter previously served as associate operating officer for oncology services at Duke University Hospital.



"Carolyn has done an outstanding job in this role, and I believe she is uniquely qualified to lead the successful integration of our oncology program across the system by effectively aligning our services and operations together with leadership in the health system, the School of Medicine, and the PDC," says William J. Fulkerson Jr., MD, senior vice president for clinical affairs for DUHS.

Marcus to lead pediatric surgical care

Jeffrey R. Marcus, MD, assistant professor of surgery and surgical director for Duke Children's Hospital and Health Center, has been named assistant vice chair for pediatric surgical affairs in the Department of Surgery. In the newly established position, Marcus will represent 13 surgeons in eight surgical sections and hopes to become a bridge between the departments of surgery, pediatrics, and the Medical Center in a way that will further increase Duke's commitment to pediatric surgical care.



"Dr. Marcus is a talented surgeon and leader, and I look forward to working with him to enhance the already strong collaboration between surgeons, pediatricians, and other pediatric providers," says Joseph St. Geme III, MD, chair of the Department of Pediatrics.

Undergrad, global program leadership for nursing school

Dorothy Powell, EdD, RN, director of the Duke University School of Nursing (DUSON)'s Office of Global and Community Health Initiatives (OGACHI), was promoted to associate dean for global and community health initiatives, effective July 1. Since creating and opening OGACHI in January 2006, Powell has been instrumental in enhancing the nursing school's strategic activities within the Durham community and around the world.



Michael Relf, RN, PhD, joined DUSON in July as its new assistant dean for undergraduate education, a few weeks in advance of his official start date of August 1. Prior to his arrival at Duke, he was the chair of the Department of Nursing at Georgetown University

School of Nursing & Health Studies. Relf received his PhD in nursing science from Johns Hopkins University, where his work focused on HIV prevention and intimate-partner violence.

New division, new chief in surgery

Bruce A. Sullenger, PhD, Joseph W. and Dorothy W. Beard Professor and director of the Duke Center for Translational Research, has been selected as chief of the Department of Surgery's newly created Division of Surgical Sciences. The division, which succeeds the former Division of Experimental Surgery, will collaborate with researchers and clinicians across Duke for the rapid translation of groundbreaking research breakthroughs into advances in clinical therapies and surgical care. **Kent J. Weinhold, PhD**, professor in surgery, will serve as division vice chief.



Sullenger



Weinhold

Wake County director

Michael D. Spiritos, MD, has been named medical director of specialty practices in Wake County, leading efforts to facilitate the growth and development of Private Diagnostic Clinic practices in and around Raleigh. He will focus on several key areas, including interdepartmental communication, facility development, and physician recruitment, with a primary goal of providing patients with easy access to the care and resources provided by Duke practitioners in Wake County. Spiritos will remain chief of medical oncology at Duke Raleigh Cancer Center.



Former President George W. Bush presented Robert J. Lefkowitz, MD, with the nation's top honor for science in September.

Lefkowitz receives National Medal of Science

Robert J. Lefkowitz, MD, James B. Duke Professor of Medicine and Howard Hughes Medical Institute investigator at Duke, has received the prestigious National Medal of Science for contributions to the biological sciences. Lefkowitz was honored for a lifetime of research into understanding the largest, most important, and most therapeutically accessible receptor system that controls the body's response to drugs and hormones.

Then-President George W. Bush presented Lefkowitz with the medal, which is the nation's highest honor for science, at a ceremony in September at the White House.

"Even for a highly decorated and often recognized scientist like Bob, this represents a remarkable and extraordinary achievement," says Victor J. Dzau, MD, chancellor for health affairs and CEO of Duke University Health System. "I am particularly excited and pleased to see Dr. Lefkowitz's work recognized in this way as his discoveries represent the very best in translational science and medicine and have served to ultimately improve the health and lives of millions of people around the globe."

The National Medal of Science was established by the U.S. Congress in 1959 as a Presidential Award to be given to individuals "deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical, or engineering sciences." This recognition now also includes the social and behavioral sciences. A committee of 12 scientists and engineers is appointed by the president to evaluate nominees for the award.

"The National Medal of Science is a great personal and professional honor that reflects my entire career in the life sciences," says Lefkowitz, who is also a professor of biochemistry, professor in immunology, and a basic-research cardiologist in the Duke Heart Center. "One of the most rewarding aspects of my career at Duke has been the opportunity to mentor more than 200 very talented students and fellows. Many of them have gone on to distinguished careers in academia and the pharmaceutical and biotechnology industries. This award honors them as much as it does me. I really can't imagine a more fulfilling career for me than to have been a professor of medicine and a scientist. I am as excited about the opportunities and challenges of our work at present as I have ever been."

Visit dukemedmag.duke.edu for a link to video of the White House presentation ceremony.



Nancy C. Andrews, MD, PhD, was recognized in *Newsweek's* "Women and Leadership" issue.



Vadim Arshavsky, PhD, received an Alcon Research Institute Award.



Darell Bigner, MD, PhD, received the 2008 Zülch Prize.



Thomas M. Coffman, MD, was named president of the American Society of Nephrology.

The Chancellor's Science Advisory Council announced the recipients of the High-Risk/High-Impact Pilot Fund Program in September:

Alejandro Aballay, PhD, assistant professor of molecular genetics and microbiology, for "Intelligent command of defenses: neural regulation of innate immunity"

Jen-Tsan Ashley Chi, MD, PhD, assistant professor in molecular genetics and microbiology, for "MicroRNA cross-species trans-splicing as a novel mechanism for malaria resistance in sickle cell disease"

Geoffrey Pitt, MD, PhD, associate professor of medicine, for "Defining unexpected roles for voltage-gated Ca²⁺ channels in development and birth defects"

Raphael Valdivia, PhD, assistant professor of molecular genetics and microbiology, for "Mutational analysis of genetically intractable organisms"

Xiao-Fan Wang, PhD, professor of pharmacology and cancer biology, for "Identification and functional characterization of microRNAs and their target genes involved in the promotion of hepatocellular carcinoma metastasis"

The program provides a one-year grant of up to \$75,000 and is intended to help faculty pursue highly innovative research that is outside the scope of their current lines of investigation.

Nancy C. Andrews, MD, PhD, vice chancellor for academic affairs and dean of the Duke University School of Medicine, was one of 10 inspiring women featured in the October 13 "Women and Leadership" issue of *Newsweek*.

In her essay for the magazine on the challenges facing women in science, she wrote, "My goal is pretty simple: to convince our students and faculty that they can go out and do whatever they want to do. People hear so much advice, including a lot of bad advice, about what they can or cannot do. I worry a lot when people come in and say, 'I was told I can't do both science and medicine,' or 'I was told I can't do medicine and be very involved with my family.' When young people hear those things, they can become self-fulfilling prophecies. If there are unwritten rules that don't make sense to me, I challenge them and see if I can change them."

Vadim Arshavsky, PhD, professor in ophthalmology and scientific director of the Duke Department of Ophthalmology, received a \$100,000 Alcon Research Institute Award in April. Arshavsky's research involves the molecular and cellular mechanisms of signal transduction in the photoreceptor cells of the retina. The Alcon Research Institute seeks and honors outstanding ophthalmology researchers from around the world.

Darell Bigner, MD, PhD, Edwin L. Jones Jr. and Lucille Finch Jones Cancer Research Professor and director of the Preston Robert Tisch Brain Tumor Center at Duke, was awarded the Zülch Prize, Germany's most prestigious award for basic neurological research.

Monoclonal antibodies developed in Bigner's laboratory are in late-stage multi-institutional clinical trials in patients with malignant brain tumors. Bigner is considered one of the world's leading authorities on brain tumors. His research focuses on the cause and improved diagnosis and treatment of malignant brain tumors in adults and children.

The Zülch Prize, awarded annually since 1990, is named in honor of the former director of the Department of Neurology at the Max Planck Institute for Brain Research in Cologne, Germany, where Bigner studied in the early 1970s. The Zülch Prize carries an award of \$36,710.

Cedric M. Bright, MD, assistant professor of medicine and Durham VAMC staff physician, received a Legacy Award from the Auxiliary to the Durham Academy of Medicine, Dentistry, and Pharmacy in August. Bright was recognized for his focus on providing health care education outreach and eliminating health disparities. The Durham Academy of Medicine, Dentistry, and Pharmacy, an organization

comprising minority physicians, dentists, and pharmacists in the Triangle area, works to improve the quality of health care within the black community. Lincoln Community Health Center is one of the beneficiaries of the group's work.

Thomas M. Coffman, MD, James R. Clapp Professor of Medicine, has been named the new president of the American Society of Nephrology (ASN). ASN is a not-for-profit organization dedicated to the study of nephrology and committed to providing a forum for the promulgation of information regarding the latest research and clinical findings on kidney diseases. Coffman became president during ASN's 41st-annual meeting and scientific exposition in Philadelphia.

Four Duke physicians were named as "America's Top Doctors for Women" in the November issue of *Women's Health*:

Diana Dell, MD, assistant professor of psychiatry & behavioral sciences

Mark Feinglos, MD, professor of medicine and chief of the Division of Endocrinology, Metabolism, & Nutrition

David Walmer, MD, PhD, associate professor of obstetrics & gynecology and chief of the Division of Reproductive Endocrinology & Fertility



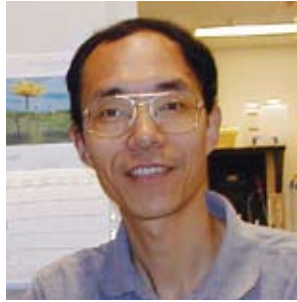
Patricia M. Dieter, PA-C, was elected to InterEd's executive committee.

Richard Weisler, MD, adjunct associate professor of psychiatry & behavioral sciences

Honorees were selected from the 10 specialties most essential to women's health, as designated by the magazine and the research firm Castle Connolly. Duke had the second-most number of physicians in the South division, which included 27 health care systems.

Patricia M. Dieter, PA-C, director of the Duke Physician Assistant Program, has been elected to the executive committee of the board of directors of the International Association for Interprofessional Education and Collaborative Practice (InterEd). The election took place at the All Together Better Health IV conference, held in June at the Karolinska Institute in Sweden. Dieter was also recognized as a distinguished fellow of the American Academy of Physician Assistants.

Michael Ehlers, MD, PhD, professor of neurobiology and Howard Hughes Medical Institute investigator, received the Breakthrough Research Award from the North Carolina Biotechnology Center, during its Health and Life Sciences Achievement Awards ceremony held in October. The award is given to a single North Carolina researcher in the life sciences for fundamental advances



Guoping Feng, PhD, received the Hartwell Biomedical Research Collaboration Award.

in the biological sciences. Ehlers's research focuses on understanding how brain cell connections form and adapt during learning and memory. This work holds promise for future breakthroughs in disorders of memory, brain development, and behavior.

Guoping Feng, PhD, assistant professor in neurobiology and director of the Neurotransgenics Core Lab, was named a co-recipient of the inaugural Hartwell Biomedical Research Collaboration Award with colleague Andrew Pieper, MD, PhD, of the University of Texas Southwestern Medical Center at Dallas. The new award will provide \$260,000 over three years to continue their research into obsessive-compulsive disorder.

Samuel Katz, MD, Wilburt C. Davison Professor Emeritus of Pediatrics and co-developer of the measles vaccine, received the North Carolina Children's Lifetime Legacy Award from Action for Children North Carolina, a nonprofit advocacy group promoting children's well-being. The development of the measles vaccine, which was licensed in 1963, and its usage have since saved the lives of millions of children worldwide. Katz continues to remain active at Duke as chairman emeritus of pediatrics and contributor to international vaccine policy development.



Chay Kuo, MD, PhD, received three prestigious awards in September.

Chay Kuo, MD, PhD, assistant professor of cell biology, has received three prestigious awards for his work in stem cell research:

- From the National Institutes of Health, the Director's New Innovator Award of \$1.5 million over five years, for work on neural stem cells and their role in brain injury and repair
- From the Sontag Foundation, the Distinguished Scientist Award for his research into brain tumor development. He was awarded \$600,000 over a four-year period beginning in October
- From the David and Lucile Packard Foundation, the Packard Fellow in Science and Engineering Award. Aimed at supporting unusually creative researchers early in their careers, the fellowship provides \$875,000 over five years.

"My job as a scientist is to tackle difficult questions and see how they will advance the field of neurological disease research in the coming years, and these awards will give me the resources to explore promising avenues and advance findings more quickly," says Kuo.



H. Kim Lyerly, MD, was appointed to the National Cancer Advisory Board.

Kerry Lee, PhD, professor of biostatistics and bioinformatics, has been selected as a fellow of the American Statistical Association. According to the ASA bylaws, "by the honorary title of Fellow, the Association recognizes full members of established reputation who have made outstanding contributions in some aspect of statistical work." Given annually, recipients of this honor are limited to no more than one-third of 1 percent of the ASA membership.

H. Kim Lyerly, MD, George Barth Geller Professor for Research in Cancer and director of the Duke Comprehensive Cancer Center, was appointed to the National Cancer Advisory Board (NCAB) in June. The 18-member board is an advisory committee of the National Cancer Institute (NCI) and serves to advise the secretary of health and human services and director of the NCI.

Lyerly was also named chair of the Cancer Centers Standing Subcommittee of the NCAB. The Cancer Centers Subcommittee works with staff of the NCI to examine issues and policies related to the Cancer Centers Program, which supports 64 NCI-designated cancer centers actively engaged in transdisciplinary research to reduce cancer incidence, morbidity, and mortality.



Thomas G. Mitchell, PhD, and **Dale Purves, MD**, were elected as fellows of the American Association for the Advancement of Science.

Two Duke faculty members were among 486 scientists elected as fellows of the American Association for the Advancement of Science (AAAS) in December:

Thomas G. Mitchell, PhD, associate professor of mycology in the Department of Molecular Genetics and Microbiology, for his contributions to the field of microbial pathogenesis, elucidating fungal-immune cell interactions, population structures of human pathogens, and how sex enables pathogen emergence

Dale Purves, MD, George Barth Geller Professor of Neurobiology and director of the Duke Center for Cognitive Neuroscience, for contributions ranging from developmental neurobiology to sensory perception, as well as for distinguished leadership as an editor, author, and administrator

The AAAS, publisher of the journal *Science*, elevates notable members to the rank of fellow to recognize their efforts in research that are deemed scientifically or socially distinguished.

Mark Onaitis, MD, assistant professor of surgery, received an Early Career Physician-Scientist award in June from the Howard Hughes Medical Institute. The award grants \$375,000 over five years to help physician-scientists at the beginning of their independent research careers.

Onaitis is part of the lab of Brigid Hogan, PhD, chair of the Department of Cell Biology, and he will use the grant to study how mutations in adult stem cells might lead to lung cancer.

In June, three Duke University School of Nursing leaders were elected to the American Academy of Nursing:

Michael Relf, RN, PhD, assistant dean for undergraduate education

Susan M. Schneider, RN, PhD, associate professor

Kevin Sowers, RN, chief operating officer and interim CEO of Duke University Hospital, and clinical associate

"The recognitions of the career accomplishments of these faculty are well deserved, and we are proud of them," says Catherine L. Gilliss, DNSc, RN, dean of the Duke University School of Nursing and vice chancellor for nursing affairs, Duke University. Gilliss is currently president-elect of the academy, and will assume the presidency in November.

Hongyan Wang, PhD, assistant professor in the Duke-NUS Graduate Medical School Singapore's Neuroscience & Behavioral Disorders department, received the Young Scientist Award 2008 for Biological and Biomedical Sciences in August. Wang was recognized for her



Mark Onaitis, MD, received an Early Career Physician-Scientist award from HHMI.

groundbreaking research on the self-renewal and differentiation of neural stem cells, and its relation to brain tumor formation.

Three faculty members at the Duke-NUS Graduate Medical School Singapore were recognized for their contributions to translational and clinical research:

Michael Chee Wei Liang, MBBS, a cognitive neuroscientist, and **David M. Virshup, MD**, program director for cancer and stem cell biology, received the Singapore Translational Research Investigator Award (STaR), offered jointly by the Singapore Ministry of Health's National Medical Research Council and the Agency for Science, Technology, and Research

Ong Sin Tiong, MB BCh, a hematologist and oncologist, received the Clinical Scientist Award, supported by the Singapore National Research Foundation

Terri Young, MD, professor of ophthalmology and pediatrics, received a \$60,000 Lew R. Wasserman Merit Award grant from Research to Prevent Blindness. Young is the inaugural director of the Ophthalmic Pediatric Genetics Research Center.



Duke University Hospital was recognized for hospital-wide performance improvements.

Duke University Hospital was selected to receive the 2007 Thomson Reuters 100 Top Hospitals Performance Improvement Leaders award.

The award is designed to identify hospital leaders, including CEOs, executive teams, and boards, that have instilled a culture of performance improvement across their organization. Performance Improvement Leaders (PI Leaders) have led their organizations to improve hospital-wide performance consistently, year after year, at a substantially faster rate than peers across the United States.

The 2007 PI Leaders made the following gains between 2002 and 2007:

- More than half significantly improved patient survival rates
- One-third decreased their average patient stay
- 14 percent showed significant improvement in patient safety

The Performance Improvement Leaders award is one of the highest tributes a management team can receive because the criteria used to determine the winners clearly shows the impact leadership has on improving value to patients and the community.

ANESTHESIOLOGY

**Terrence K. Allen, MBBS
Anesthesiology**

Particular Clinical Interests and Skills: High-risk OB anesthesiology
MBBS Degree: University of the West Indies, Mona (Jamaica) 1998

Residency: Anesthesiology, Pennine School of Anesthesia (UK), 2001-2003
Anesthesiology, Northwest School of Anesthesia, Manchester (UK), 2003-2008
Fellowship: OB Anesthesiology, Duke University Medical Center, 2006-2007
Other: Certificate, Completion of Training (Anesthesia), Postgraduate Medical Education and Training Board (UK), 2008

**Raquel R. Bartz, MD
Anesthesiology**

Particular Clinical Interests and Skills: Care of patients through the entire spectrum of surgical illness from the operating room as an anesthesiologist to their post-operative critical care course, focus on organ function stabilization and treatment of sepsis and shock in ICU
MD Degree: University of Washington School of Medicine, 1998

Residency: Internship, University of Iowa Hospital and Clinics, 1999

Internal Medicine, University of Wisconsin Hospital and Clinics, 2001
Pulmonary and Critical Care, Duke University Medical Center, 2004

Anesthesiology, Duke University Medical Center, 2008

COMMUNITY AND
FAMILY MEDICINE**John W. Ragsdale III, MD
Family Medicine**

Particular Clinical Interests and Skills: Women's health, low-risk obstetrics, dermatology
MD Degree: Medical College of Georgia, 2000
Residency: Family Medicine, Georgetown University (Washington, D.C.), 2000-2003

**Madhavi G. Reddy, MBBS
Community Health**

Particular Clinical Interests and Skills: Family medicine, adolescent health, community health
MBBS Degree: MBBS, Sri Ramachandra Medical College and Research Institute (India), 2002

Residency: Family Medicine, Penn State Hershey Medical Center, Good Samaritan Hospital, 2007

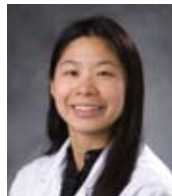
**Jonathan L. Sheline, MD
Obesity Treatment**

Particular Clinical Interests and Skills: General family medicine including all ages and problems, obesity treatment
MD Degree: University of North Carolina at Chapel Hill School of Medicine, 1984
Residency: Family Medicine, University of New Mexico, 1990
Other Degree: MS, Epidemiology, Harvard School of Public Health (Massachusetts), 1978

DUKE PRIMARY CARE

**Meredith F. Barbour, MD
Duke Medicine at Brier Creek**

Particular Clinical Interests and Skills: Preventive medicine, women's health, geriatrics
MD Degree: Brody School of Medicine at East Carolina University (North Carolina), 2005
Residency: Family Medicine, Wake Forest University (North Carolina) 2008

**Yvonne E. Berstler, MD
Butner-Creedmoor Family Medicine**

Particular Clinical Interests and Skills: Full-spectrum family medicine with focus on chronic care, pediatrics, and office procedures
MD Degree: Wake Forest University School of Medicine (North Carolina), 2005
Residency: Family Medicine, UNC Hospitals, 2005-2008

**Heather L. Christie, MD
Duke Primary Care Morrisville**

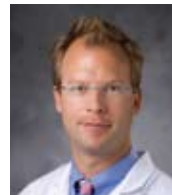
Particular Clinical Interests and Skills: Family practice including preventive medicine, management of chronic diseases
MD Degree: Tulane University School of Medicine (Louisiana), 2005
Residency: Family Medicine, Duke University Medical Center, 2008

**Vidette V. Cooper, MD
Harps Mill Internal Medicine**

Particular Clinical Interests and Skills: Care for patients age 18 and older, acute and chronic medical conditions, women's issues
MD Degree: Medical University of South Carolina College of Medicine, 1997
Residency: Internal Medicine, Geisinger Medical Center (Pennsylvania), 2000

**Vandana P. Devalapalli, MD
Harps Mill Internal Medicine**

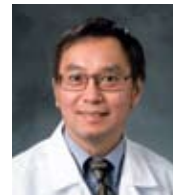
Particular Clinical Interests and Skills: General internal medicine
MD Degree: Gandhi Medical College (India), 1982
Residency: General Internal Medicine, St. Francis Hospital (Illinois)
Other: MHS, Clinical Leadership, Duke University, 2006; Fellow, American College of Physicians

**Alexandre W. Huin, MD
Timberlyne Family Medical Center**

Particular Clinical Interests and Skills: Family medicine
MD Degree: Cebu Institute of Medicine (Philippines), 1999
Residency: Family Medicine, Penn State Hershey Medical Center, 2002

**Sharrah E. Jenkins, MD
Harps Mill Internal Medicine**

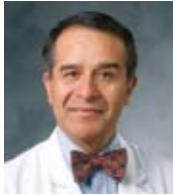
Particular Clinical Interests and Skills: General internal medicine
MD Degree: Morehouse School of Medicine (Georgia), 1999
Residency: Internal Medicine, Brown Medical School/Rhode Island Hospital, 2002

**William Y. Low, MD
Duke Urgent Care**

Particular Clinical Interests and Skills: Urgent care
MD Degree: University of Toronto Faculty of Medicine (Canada), 1980
Residency: Rotating Internship, Doctors Hospital, Toronto (Canada), 1980-1981

**Louise D. Metz, MD
Sutton Station Internal Medicine**

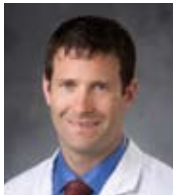
Particular Clinical Interests and Skills: Women's health, heart disease in women, osteoporosis, management of chronic conditions, including diabetes and hypertension
MD Degree: University of North Carolina at Chapel Hill School of Medicine, 2000
Residency: Internal Medicine, University of California, San Francisco, 2003



Mario Ernesto Olmedo, MD
Duke Urgent Care
Particular Clinical Interests and Skills: Urgent care medicine including pediatrics, adolescents, adults, dermatology, gynecology, sports medicine, urgent medical care, minor wound care, Latino health care, care for underserved populations, international medicine
MD Degree: University of North Carolina at Chapel Hill School of Medicine, 2005
Residency: Family Medicine, Duke University Medical Center, 2005-2008



Kenyon Railey, MD
Butner-Creedmoor Family Medicine
Particular Clinical Interests and Skills: Diabetes, women's health, chronic disease management, sports medicine, behavioral health, minority health
MD Degree: Saint Louis University School of Medicine (Missouri), 2005
Residency: Family Medicine, UNC Hospitals, 2008



Jeffrey B. Roberts, MD
Duke Urgent Care
Particular Clinical Interests and Skills: Care of acute and chronic sports medicine or musculoskeletal injuries, general medical services for all ages
MD Degree: Virginia Commonwealth University School of Medicine, 2004
Residency: Family Medicine, Duke University Medical Center, 2004-2007
Fellowship: Sports Medicine, Duke University Medical Center, 2007-2008



Sharon S. Rubin, MD
Duke Primary Care Pickett Road
Particular Clinical Interests and Skills: Preventive medicine, women's health
MD Degree: Georgetown University School of Medicine (Washington, D.C.), 2004
Residency: Internal Medicine, NewYork-Presbyterian/Weill Cornell Medical Center, 2005-2008



Steven L. Sanderson, MD
Duke Medicine at Brier Creek
Particular Clinical Interests and Skills: All aspects of family medicine, routine health preventive care, chronic disease management, acute care needs for men and women from newborns to great-grandparents
MD Degree: University of Cincinnati College of Medicine (Ohio), 1993-1997
Residency: Family Medicine, Duke University Medical Center, 1997-2000



Heidi L. Schecodnic, MD
Duke Primary Care Creedmoor Road
Particular Clinical Interests and Skills: Primary care medicine for adults, including disease management and prevention
MD Degree: Medical College of Ohio, 1999
Residency: Internal Medicine, Medical College of Ohio, 2002



Anthony F. Titus, MD
Duke Urgent Care Morrisville
Particular Clinical Interests and Skills: Urgent care
MD Degree: Wright State University Boonshoft School of Medicine (Ohio), 1985
Residency: Family Medicine, Penn State Hershey Medical Center, 1985-1988



David K. Wellman, MD
Duke Urgent Care
Particular Clinical Interests and Skills: Urgent care
MD Degree: Duke University School of Medicine, 1972
Residency: Surgery, Duke University Medical Center, 1971-1978

HOSPITAL MEDICINE



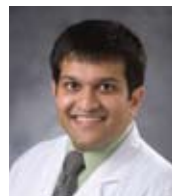
Alexis L. Beatty, MD
Duke University Hospital Medicine Program
Particular Clinical Interests and Skills: General medicine in the hospital setting, student and house staff education, prevention of cardiovascular disease
MD Degree: Duke University School of Medicine, 2005
Residency: Internal Medicine, Massachusetts General Hospital, 2005-2008



Annette M. Beyea, DO
Durham Regional Hospital Medicine Program
Particular Clinical Interests and Skills: Highest-quality medical care in the hospital medicine environment, research and clinical practice to improve the delivery of health care within a complex system
DO Degree: University of New England College of Osteopathic Medicine (Maine), 2005
Residency: Internal Medicine, Dartmouth-Hitchcock Medical Center (New Hampshire)



Kevin D. Boatwright, MD
Durham Regional Hospital Medicine Program
Particular Clinical Interests and Skills: Infectious diseases, infection control, medical education
MD Degree: University of South Carolina School of Medicine, 1999
Residency: Internal Medicine, Palmetto Health Richland Memorial (South Carolina), 2002
Fellowship: Infectious Diseases, Medical University of South Carolina, 2006



Saumil M. Chudgar, MD
Duke University Hospital Medicine Program
Particular Clinical Interests and Skills: Hospital medicine, consultative general internal medicine for inpatients, resident and medical student education
MD Degree: Duke University School of Medicine, 2005
Residency: Internal Medicine, Duke University Medical Center, 2008



Craig T. Davis, MD
Durham Regional Hospital Medicine Program
Particular Clinical Interests and Skills: Hospital medicine
MD Degree: University of Illinois College of Medicine at Chicago, 1999
Residency: Internal Medicine, Indiana University, 2002
Other Degree: BSE, Biomedical Engineering, Duke University, 1995



Brian C. Griffith, MD
Duke University Hospital Medicine Program
Particular Clinical Interests and Skills: Hospital medicine, general internal medicine consultation for hospitalized patients, resident and medical student clinical education
MD Degree: Duke University School of Medicine, 2005
Residency: Internal Medicine, Duke University Medical Center, 2005-2008



Jaisheela Kondru, MD
Durham Regional Hospital Medicine Program
Particular Clinical Interests and Skills: Hospital medicine
MBBS Degree: Rangaraya Medical College (India), 1999
Residency: Internal Medicine, State University of New York, Robert Packer Hospital (Pennsylvania), 2000-2001
Internal Medicine, Seton Hall University, Trinitas Hospital (New Jersey), 2001-2003



Neha N. Mehta, MD
Durham Regional Hospital
Medicine Program
Particular Clinical Interests and Skills: Hospital medicine
MD Degree: University of Arkansas for Medical Sciences College of Medicine, 2005
Residency: Internal Medicine, University of Arkansas for Medical Sciences, 2005-2008



Amelia E. Morales, MD
Durham Regional Hospital
Medicine Program
Particular Clinical Interests and Skills: Hospital medicine
MD Degree: Brody School of Medicine at East Carolina University (North Carolina), 2005
Residency: Internal Medicine, University Hospitals of Case Western Reserve (Ohio), 2008



Cara L. O'Brien, MD
Duke Hospital Medicine
Program
Particular Clinical Interests and Skills: Hospital medicine, general internal medicine consultation for hospitalized patients, resident and medical student education
MD Degree: Washington University in St. Louis School of Medicine (Missouri), 2004
Residency: Internal Medicine, Duke University Medical Center, 2004-2008

James V. Soldin II, MD
Duke Raleigh Hospital
Medicine Program
Particular Clinical Interests and Skills: Hospital medicine
MD Degree: University of Minnesota Medical School, 1978
Residency: Internal Medicine, Hennepin County Medical Center (Minnesota), 1981



Elizabeth M. Volz, MD
Duke University Hospital
Medicine Program
Particular Clinical Interests and Skills: Hospital medicine, including cardiovascular disease, especially heart failure and critical care
MD Degree: University at Buffalo SUNY School of Medicine & Biomedical Sciences, 2005
Residency: Internal Medicine, Duke University Medical Center, 2008

MEDICINE



George L. Adams, MD
Cardiovascular Medicine
Particular Clinical Interests and Skills: Interventional cardiology with interests in patients with coronary, cerebral, aortic, renal, and peripheral vascular disease; coronary interventions; peripheral interventions; carotid interventions; noninvasive procedures, including nuclear stress tests, trans-thoracic echocardiography, coronary computed tomography, carotid ultrasound, ankle/brachial indices, pulse volume recordings of the lower extremities
MD Degree: Brody School of Medicine at East Carolina University (North Carolina), 2000
Residency: Internal Medicine, University of Texas Southwestern, Parkland Memorial Hospital, 2003
Fellowship: General Cardiology, Duke University Medical Center, 2007
Other Degree: MHS, Cardiology, Duke University School of Medicine, 2007



Amber Reck Atwater, MD
Dermatology
Particular Clinical Interests and Skills: General dermatology, skin cancer, contact dermatitis, patch testing, Botox injections, nail surgery
MD Degree: University of Illinois College of Medicine at Chicago, 2002
Residency: Internal Medicine, Duke University Medical Center, 2002-2005
Fellowship: Dermatology, University of Wisconsin, 2005-2008



Sandesh Dev, MD
Cardiovascular Medicine
Particular Clinical Interests and Skills: Heart failure, cardiac transplantation, mechanical circulatory support
MD Degree: Ohio State University College of Medicine, 1998
Residency: Internal Medicine, Boston Medical Center (Massachusetts), 2001
Fellowship: Cardiology, Washington Hospital Center (Washington, D.C.), 2004
Other Degree: Heart Transplantation, University of California, Los Angeles, 2005



Daphne R. Friedman, MD
Medical Oncology
Particular Clinical Interests and Skills: Care of patients with hematologic cancers; research in improving treatment and outcomes in hematologic cancers, particularly chronic lymphocytic leukemia; research in survivorship issues
MD Degree: University of Maryland School of Medicine, 2002
Residency: Internal Medicine, University of Maryland Medical Center, 2002-2005
Fellowship: Hematology-Oncology, Duke University Medical Center, 2005-2008



Mahfuzul Haque, MBBS
Gastroenterology
Particular Clinical Interests and Skills: Advanced interventional endoscopy, ERCP and cholangioscopy, biliary and pancreatic diseases, colonoscopy and colorectal cancer screening, inflammatory bowel diseases, radiofrequency ablation of Barrett's esophagus, capsule endoscopy, quality improvement in endoscopy, NOTES (natural orifice transluminal endoscopic surgery)
MBBS Degree: Dhaka Medical College (Bangladesh)
Residency: Internal Medicine, Wellington Hospital (New Zealand)
Fellowship: Gastroenterology, Wellington Hospital (New Zealand)
Other: Fellow, Royal Australasian College of Physicians



Beatrice D. Hong, MD
Endocrinology, Metabolism, and Nutrition
Particular Clinical Interests and Skills: General endocrinology
MD Degree: Johns Hopkins University School of Medicine (Maryland), 2002
Residency: Internal Medicine, Duke University Medical Center, 2005
Fellowship: Endocrinology, Duke University Medical Center, 2008



Wanda C. Lakey, MD
Endocrinology, Metabolism, and Nutrition
Particular Clinical Interests and Skills: General endocrinology, bone disorders, metabolic abnormalities secondary to antiretroviral therapy in HIV-infected patients
MD Degree: University of South Alabama College of Medicine, 2002

Residency: Internal Medicine, Wake Forest University (North Carolina), 2002-2005
Fellowship: Endocrinology, Duke University Medical Center, 2005-2008
Other Degree: MHS, Clinical Health Sciences, Duke University School of Medicine, 2008



Mark C. Lanasa, MD, PhD
Medical Oncology
Particular Clinical Interests and Skills: Chronic lymphocytic leukemia, small lymphocytic lymphoma, B cell lymphoproliferative disorders
MD Degree: University of Pittsburgh School of Medicine (Pennsylvania), 2002
Residency: Internal Medicine, Duke University Medical Center, 2002-2005
Fellowship: Hematology-Oncology, Duke University Medical Center, 2005-2008
Other Degree: PhD, University of Pittsburgh (Pennsylvania), 2000



Jesse Liu, MD
Gastroenterology
Particular Clinical Interests and Skills: General gastroenterology, esophageal disorders, colon cancer
MD Degree: University of Maryland School of Medicine, 2001
Residency: Internal Medicine, California Pacific Medical Center, 2001-2005
Fellowship: Gastroenterology, California Pacific Medical Center, 2005-2008



Mehri S. McKellar, MD
Infectious Diseases and International Health
Particular Clinical Interests and Skills: HIV infection including acute HIV infection and its treatment, general infectious diseases
MD Degree: University of Arizona College of Medicine, 2000
Residency: Internal Medicine, University of Utah, 2000-2003
Fellowship: Infectious Diseases, University of Utah, 2003-2006



Kelly C. Nelson, MD
Dermatology
Particular Clinical Interests and Skills: Management of patients with personal history of melanoma, patients at high risk of developing melanoma
MD Degree: University of North Carolina at Chapel Hill School of Medicine, 2004
Residency: Internal Medicine, UNC Hospitals, 2004-2005
 Dermatology, UNC Hospitals, 2005-2008



Kelvin B. Raybon, MD
Medical Oncology
Particular Clinical Interests and Skills: Clinical oncology trials in the community setting, benign hematology including anemias and thrombotic disorders
MD Degree: Tulane University School of Medicine (Louisiana), 1989
Residency: Internal Medicine, Keesler Medical Center, Keesler Air Force Base (Mississippi), 1989-1992
Fellowship: Hematology-Oncology, Wilford Hall Medical Center, Lackland Air Force Base (Texas), 1993-1996



Douglas D. Schocken, MD
Cardiovascular Medicine
Particular Clinical Interests and Skills: General, consultative, and noninvasive cardiology with emphasis on heart failure, preventive cardiology, heart disease in patients with cancer, heart disease in elderly patients
MD Degree: Duke University School of Medicine, 1974
Residency: Internal Medicine, Duke University Medical Center, 1978
Fellowship: Cardiology, Duke University Medical Center, 1981



Savita Srivastava, MD
Gastroenterology
Particular Clinical Interests and Skills: General gastroenterology and hepatology, autoimmune diseases of the gastrointestinal tract (autoimmune hepatitis, primary biliary cirrhosis, celiac disease)
MD Degree: Albert Einstein College of Medicine of Yeshiva University (New York), 2001
Residency: Internal Medicine, Georgetown University Hospital (Washington, D.C.), 2001-2004
Fellowship: Gastroenterology, Yale University School of Medicine (Connecticut), 2005-2008



Tereza Martinu, MD
Pulmonary, Allergy, and Critical Care
Particular Clinical Interests and Skills: Diagnosis and treatment of end-stage lung diseases as well as care of lung transplant patients before and after transplantation
MD Degree: McGill University Faculty of Medicine (Canada), 2002
Residency: Internal Medicine, Duke University Medical Center, 2005
Fellowship: Pulmonary and Critical Care Medicine, Duke University Medical Center, 2008



Jeffrey M. Peppercorn, MD
Medical Oncology
Particular Clinical Interests and Skills: Early-stage and advanced breast cancer, breast cancer survivors
MD Degree: Harvard Medical School (Massachusetts), 1998
Residency: Internal Medicine, Massachusetts General Hospital, 1998-2001
Fellowship: Hematology-Oncology, Dana-Farber Cancer Institute (Massachusetts), 2002-2005
Other Degree: MPH, Harvard School of Public Health (Massachusetts), 1998

James S. Mills, MD
Cardiovascular Medicine
Particular Clinical Interests and Skills: Diagnostic and interventional coronary angiography, peripheral arterial disease, diagnostic and interventional peripheral angiography, noninvasive vascular imaging
MD Degree: University of Florida College of Medicine, 2000
Residency: Internal Medicine, Brigham and Women's Hospital (Massachusetts), 2000-2003
Fellowship: Cardiology, Duke University Medical Center, 2003-2007
 Interventional Cardiology, Duke University Medical Center, 2007-2008



Christopher B. Pugh, MD
Pulmonary, Allergy, and Critical Care
Particular Clinical Interests and Skills: Asthma, COPD, interstitial lung disease, lung cancer, sleep-disordered breathing
MD Degree: University of North Carolina at Chapel Hill School of Medicine, 1997
Residency: Internal Medicine, George Washington University Medical Center (Washington, D.C.), 1997-2001
Fellowship: Pulmonary and Critical Care Medicine, UNC Hospitals, 2001-2004

on the spot

Q: With the highly publicized JUPITER trial showing that statin drugs help to prevent heart disease even for many people without high cholesterol*, many people are asking, "Should everyone be taking a statin?"

A: No! Statin drugs are great for lowering cholesterol—especially LDL (the "bad" cholesterol)—and may have other beneficial effects that we don't yet fully understand. Regardless, they do have side effects, some of which may be serious. In patients without elevated cholesterol and known heart disease, statin benefits are statistically significant, but very small. Healthy lifestyle habits—including prudent diet to achieve and maintain ideal body weight, participation in frequent moderate exercise, and avoiding smoking—are still the foundations of heart disease prevention.

—Douglas D. Schocken, MD

* *N Engl J Med*, 2008 Nov 20;359(21):2195-2207

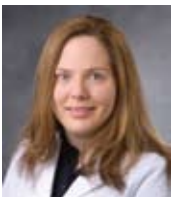
Hans L. Tillmann, MD
Gastroenterology
Particular Clinical Interests and Skills: Liver disease with a focus on viral hepatitis with or without HIV co-infection, new therapeutics and treatment optimization
MD Degree: Johannes Gutenberg University of Mainz (Germany), 1992
Residency: Gastroenterology and Liver Transplantation, Hannover Medical School (Germany), 1992-2003
Fellowship: Gastroenterology and Liver Transplantation, Hannover Medical School (Germany), 1992-2003

Pierluigi Tricoci, MD, PhD
Cardiovascular Medicine
Particular Clinical Interests and Skills: General noninvasive and critical care cardiology, including acute chest pain, acute and chronic coronary artery disease, heart failure, and inpatient and outpatient consultative cardiology
MD Degree: University of Bologna School of Medicine (Italy), 1998
Fellowship: University of Bologna School of Cardiology (Italy), 1998-2002
 Cardiovascular Research, Duke University Medical Center, 2004-2007
Other Degrees: PhD, Physiopathology of Heart Failure, University of Bologna (Italy), 2003-2006
 MHS, Clinical Research, Duke University School of Medicine, 2004-2006



Christopher R. Walters, MD
Cardiovascular Medicine
Particular Clinical Interests and Skills: Clinical cardiology including acute cardiac care, permanent pacemakers, echocardiograms and cardiac catheterizations, nuclear cardiology, and cardiac CT angiography
MD Degree: Wake Forest University School of Medicine (North Carolina), 2001
Residency: Internal Medicine, Wake Forest University (North Carolina), 2001-2004
Fellowship: Cardiology, University of Kentucky Medical Center, 2004-2007
 Cardiology, Duke University Medical Center, 2007-2008

Yu-Ping Tracy Wang, MD
Cardiovascular Medicine
Particular Clinical Interests and Skills: General and noninvasive cardiology, including acute and chronic coronary artery disease, heart failure, and outpatient consultative cardiology
MD Degree: Harvard Medical School (Massachusetts), 2001
Residency: Internal Medicine, Brigham and Women's Hospital (Massachusetts), 2001-2004
Fellowship: Cardiology, Duke University Medical Center, 2004-2007
Other Degrees: MS, Molecular Biochemistry and Biophysics, Yale University (Connecticut), 1997
 MHS, Duke University, 2008

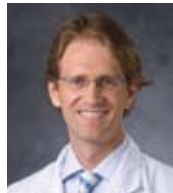


Nicole L. Whitlatch, MD
Medical Oncology
Particular Clinical Interests and Skills: General hematology and oncology, thrombophilia
MD Degree: Boston University School of Medicine (Massachusetts), 2002
Residency: Internal Medicine, Beth Israel Deaconess Medical Center (Massachusetts), 2002-2004
 Internal Medicine, Duke University Medical Center, 2004-2005

Fellowship: Hematology-Oncology, Duke University Medical Center, 2005-2008
Other Degree: MA, Physiology, Boston University School of Medicine (Massachusetts), 1998



Mark A. Winchester, MD
Cardiovascular Medicine
Particular Clinical Interests and Skills: General cardiovascular medicine, predictive and preventive cardiology, heart failure disease management, genome-guided personalized medicine, translation of medical research into new evidence-based models of clinical care
MD Degree: University of California, San Francisco, School of Medicine, 1974
Residency: Internal Medicine, Massachusetts General Hospital, 1974-1976
Fellowship: Cardiovascular Medicine, Stanford University (California), 1977-1979



Cameron R. Wolfe, MBBS
Infectious Diseases and International Health
Particular Clinical Interests and Skills: HIV infection, travel and tropical medicine, refugee and developing world medicine, general infectious diseases
MBBS Degree: University of Melbourne School of Medicine (Australia), 2000
Residency: Internal Medicine, St. Vincent's Hospital Melbourne (Australia), 2001-2005
Fellowship: Infectious Diseases, Monash Medical Center (Australia), 2006-2007
 Infectious Diseases, Duke University Medical Center, 2007-2008



S. Yousuf Zafar, MD
Medical Oncology
Particular Clinical Interests and Skills: Gastrointestinal oncology, including pancreatic, esophageal, gastric, and colorectal cancers, research interests in health services, access to colorectal cancer care, and supportive care
MD Degree: Medical College of Ohio, 2002
Residency: Internal Medicine, University of Cincinnati (Ohio), 2002-2005
Fellowship: Hematology-Oncology, Duke University Medical Center, 2005-2008

OBSTETRICS AND GYNECOLOGY



Kimberly B. Fortner, MD
Maternal-Fetal Medicine
Particular Clinical Interests and Skills: Maternal-fetal medicine
MD Degree: Emory University School of Medicine (Georgia), 2001
Residency: OB/GYN, Johns Hopkins Medical Institutions (Maryland), 2005
Fellowship: Maternal-Fetal Medicine, Duke University Medical Center, 2005-present



Michele T. Quinn, MD
General Obstetrics and Gynecology
Particular Clinical Interests and Skills: Group prenatal care, incorporating complementary alternative therapies into prenatal care and women's health in general, postpartum depression, functional MRI to study the spectrum of postpartum depression
MD Degree: Duke University School of Medicine, 2001

Residency: Obstetrics and Gynecology, Duke University Medical Center, 2001-2002, 2005-2008
 Radiology, UNC Hospitals, 2004-2005
Other Degrees: MHS, Clinical Research, Duke University, 2001
 MS, Biochemistry, Duke University, 1997



Patrick P. Yeung, MD
Minimally Invasive Gynecologic Surgery
Particular Clinical Interests and Skills: Minimally invasive fertility-restoring surgery, laparoscopic laser excision of endometriosis
MD Degree: Queen's University Faculty of Health Sciences (Canada), 2000
Residency: Family Medicine, St. John's Mercy Medical Center (Missouri), 2000-2003
 Obstetrics and Gynecology, Georgetown University Medical Center (Washington, D.C.), 2003-2007
Fellowships: AAGL/SRS Advanced Gynecologic Endoscopy, University of Louisville (Kentucky), 2007-2008
 Center for Endometriosis Care (Georgia), 2008

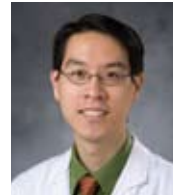
OPHTHALMOLOGY



Christopher S. Boehlke, MD
Cornea and External Disease
Particular Clinical Interests and Skills: Medical and surgical diseases of the cornea and anterior segment of the eye; corneal transplantation, including DSEK; cataract surgery using astigmatism- and presbyopia-correcting intraocular lens; laser vision correction, including LASIK, PRK, and PTK
MD Degree: University of Minnesota Medical School, 2003
Residency: Ophthalmology, Kellogg Eye Center, University of Michigan, 2007
Fellowship: Cornea, External Disease, and Refractive Surgery, Duke Eye Center, 2008



Thomas G. Hunter, MD
Comprehensive Ophthalmology Service
Particular Clinical Interests and Skills: Diagnosis and management of common ocular diseases through medical and surgical intervention, cataract and glaucoma surgery, comprehensive eye care, screening for cataracts, glaucoma, diabetic retinopathy, macular degeneration
MD Degree: University of Tennessee College of Medicine, 2003
Residency: Ophthalmology, Howard University Medical Center (Washington, D.C.), 2007
Fellowship: Glaucoma, Duke Eye Center, 2008



Anthony Kuo, MD
Corneal and External Disease
Particular Clinical Interests and Skills: Medical and surgical management of corneal diseases, including corneal transplantation as well as laser refractive surgery and general eye care
MD Degree: Vanderbilt University School of Medicine (Tennessee), 2002
Residency: Internal Medicine, University of Pittsburgh Medical Center (Pennsylvania), 2002-2003
 Ophthalmology, University of Pittsburgh Medical Center Eye Center, Eye and Ear Institute (Pennsylvania), 2003-2006
Fellowship: Cornea, External Disease, and Refractive Surgery, Duke Eye Center, 2006-2008

PATHOLOGY



John T. Petrowski III, MD
Comprehensive Ophthalmology Service
Particular Clinical Interests and Skills: General optometric services, refraction, contact lens fitting, specialty contact lens fitting, monitoring for diabetic retinopathy, glaucoma screening, screen/counsel candidates for refractive surgery and cataract surgery, routine eye exams
OD Degree: New England College of Optometry (Massachusetts), 1987



Henry Tseng, MD, PhD
Glaucoma Service
Particular Clinical Interests and Skills: Diagnosis and treatment of glaucoma, cataracts, and general diseases, glaucoma laser, incisional surgical therapies, cataract surgery
MD Degree: University of Pennsylvania School of Medicine, 2002
Residency: Ophthalmology, Duke Eye Center, 2003-2006
Fellowship: Clinical Fellowship, Duke Eye Center, 2006-2008
Research Fellowship, Duke Eye Center, 2007-2008
Other Degree: PhD, Neuroscience, University of Pennsylvania, 2002



Nicholas Bandarenko III, MD
Transfusion Services
Particular Clinical Interests and Skills: Blood banking, transfusion medicine, apheresis (donor, therapeutic, cellular therapy), clinical consultation
MD Degree: Wake Forest University School of Medicine (North Carolina), 1990
Residency: Pathology, Duke University Medical Center, 1995
Fellowship: Transfusion Medicine/Blood Bank, UNC Hospitals, 1996



Anne F. Buckley, MD
Neuropathology
Particular Clinical Interests and Skills: Diagnosis of neoplastic, infectious/inflammatory, and developmental disorders in the central and peripheral nervous systems and in muscle
MD Degree: University of Chicago Pritzker School of Medicine (Illinois), 2003
Residency: Anatomic Pathology, University of California, San Francisco, 2003-2005
Fellowship: Surgical Pathology, University of California, San Francisco, 2005-2006
Neuropathology, University of California, San Francisco, 2006-2008

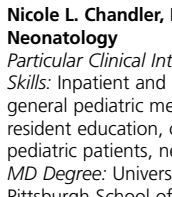


Puja K. Puri, MD
Dermatopathology
Particular Clinical Interests and Skills: Dermatopathology
MD Degree: Eastern Virginia Medical School, 2004
Residency: Pathology, George Washington University (Washington, D.C.), 2004-2007
Fellowship: Dermatopathology, Geisinger Medical Center (Pennsylvania), 2007-2008

PEDIATRICS



Michael J. Campbell, MD
Cardiology
Particular Clinical Interests and Skills: Children and adults with congenital heart disease, transesophageal echocardiography, fetal echocardiography, cardiac MRI
MD Degree: University of South Carolina School of Medicine, 2001
Residency: Pediatrics, Vanderbilt University Medical Center (Tennessee), 2001-2004
Fellowship: Pediatric Cardiology, Vanderbilt University Medical Center (Tennessee), 2004-2007
Cardiovascular Pharmacology, Vanderbilt University Medical Center (Tennessee), 2006-2007
Advanced Cardiac Imaging, Vanderbilt University Medical Center (Tennessee), 2007-2008

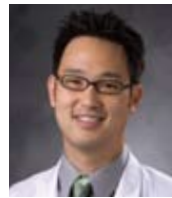


Nicole L. Chandler, MD
Neonatology

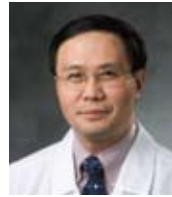
Particular Clinical Interests and Skills: Inpatient and outpatient general pediatric medicine, resident education, critically ill pediatric patients, neonatology
MD Degree: University of Pittsburgh School of Medicine (Pennsylvania), 2004
Residency: Pediatrics, UNC Hospitals, 2005-2008



Ivan K. Chinn, MD
Allergy and Immunology
Particular Clinical Interests and Skills: Primary immune disorders and immunodeficiencies, thymus transplantation for DiGeorge syndrome, evaluation of recurrent infections, allergic diseases (e.g. asthma, allergic rhinitis, food hypersensitivity)
MD Degree: University of Texas Southwestern Medical School at Dallas, 2001
Residency: Pediatrics, Tulane University Medical Center (Louisiana), 2001-2004
Fellowship: Allergy and Immunology, Duke University Medical Center, 2004-2008



Eugene I. Hwang, MD
Hematology-Oncology
Particular Clinical Interests and Skills: Targeted molecular therapy for solid tumors in general, and medulloblastoma in specific
MD Degree: Duke University School of Medicine, 2002
Residency: Pediatrics, Brown University/Rhode Island Hospital, 2005
Fellowship: Hematology-Oncology, Duke University Medical Center, 2008



Yong-hui Jiang, MD, PhD
Medical Genetics
Particular Clinical Interests and Skills: Clinical genetics and metabolism, genetic basis of neurobehavioral disorders including autism spectrum disorder, Angelman and Prader-Willi syndromes
MD Degree: Shanghai Medical University (China), 1987
Residency: Pediatrics, Texas Children's Hospital, Baylor College of Medicine, 2002-2005
Fellowship: Clinical Genetics and Metabolism, Baylor College of Medicine (Texas), 2005-2007
Other Degree: PhD, Molecular and Human Genetics, Baylor College of Medicine (Texas), 1999



Michael H. Land, MD
Allergy and Immunology
Particular Clinical Interests and Skills: General allergy and immunology, allergic rhinitis and sinusitis, atopic dermatitis, asthma, food allergy, urticaria, primary immune deficiency, evaluation of chronic infections

MD Degree: Wake Forest University School of Medicine (North Carolina), 2002
Residency: Pediatrics, University of California, Los Angeles, Medical Center, 2005
Fellowship: Allergy and Immunology, University of California, Los Angeles, Medical Center, 2008



Robert W. Lenfestey, MD
Neonatology
Particular Clinical Interests and Skills: Pediatric pharmacology, neuroprotection of very low birth-weight infants
MD Degree: University of North Carolina at Chapel Hill School of Medicine, 2002
Residency: Pediatrics, Duke University Medical Center, 2005
Fellowship: Neonatology, Duke University Medical Center, 2008

Tom K. Lin, MD
Gastroenterology, Hepatology, and Nutrition
Particular Clinical Interests and Skills: General pediatric gastroenterology, biliary diseases/disorders, inflammatory bowel diseases
MD Degree: Wright State University Boonshoft School of Medicine (Ohio), 2001
Residency: Pediatrics, University of Illinois at Chicago, 2001-2004
Fellowship: Pediatric Gastroenterology, Nationwide Children's Hospital (Ohio), 2004-2007



David C. Mellinger, MD
Student Health
Particular Clinical Interests and Skills: General health care and preventive medicine for college students, type 1 diabetes and men's health
MD Degree: University of Virginia School of Medicine, 1991
Residency: Pediatrics, University of Wisconsin Hospitals and Clinics, 1991-1995



Mohamad A. Mikati, MD
Division Chief
Neurology

Particular Clinical Interests and Skills: Intractable epilepsy and epileptic encephalopathies, pre-surgical evaluation for epilepsy surgery, development and testing of new antiepileptic drugs, febrile seizures, general pediatric neurology
MD Degree: American University of Beirut (Lebanon), 1980
Residency: Pediatrics, American University of Beirut Medical Center (Lebanon), 1979-1982
Pediatric Neurology, Massachusetts General Hospital, 1982-1985
Fellowship: Pediatric Medical Genetics, Johns Hopkins Hospital (Maryland), 1980
Neurophysiology, Children's Hospital Boston (Massachusetts), 1984-1985
Research Fellowship, Pharmacology, Children's Hospital Boston and VA Boston Healthcare (Massachusetts), 1985-1986

Kristin M. Page, MD
Blood and Marrow
Transplantation

Particular Clinical Interests and Skills: Pediatric blood and marrow transplantation
MD Degree: University of Vermont College of Medicine, 2002
Residency: Pediatrics, University of Vermont, 2002-2005
Fellowship: Pediatric Hematology-Oncology, Duke University Medical Center, 2005-2008



Sara K. Pasquali, MD
Cardiology

Particular Clinical Interests and Skills: Evaluation and treatment of congenital and acquired pediatric heart disease, echocardiography in the diagnosis and management of congenital heart disease, outcomes assessment after congenital heart surgery

MD Degree: Duke University School of Medicine, 2002
Residency: Pediatrics, Children's Hospital of Philadelphia (Pennsylvania), 2005
Fellowship: Pediatric Cardiology, Children's Hospital of Philadelphia (Pennsylvania), 2008



Stacey Peterson-Carmichael, MD
Critical Care Medicine

Particular Clinical Interests and Skills: Lung pathophysiology as it relates to acute and chronic lung disease in children, performance of lung function measures in infants with ventilator-associated lung injury, RSV, congenital diaphragmatic hernia
MD Degree: University of North Carolina at Chapel Hill School of Medicine, 2001
Residency: Pediatrics, North Carolina Children's Hospital, UNC Hospitals, 2001-2004
Fellowship: Pediatric Critical Care Medicine, North Carolina Children's Hospital, UNC Hospitals, 2004-2008
Pediatric Pulmonology, North Carolina Children's Hospital, UNC Hospitals, 2004-2008

Vandana Shashi, MBBS, MD
Medical Genetics

Particular Clinical Interests and Skills: Chromosome 22q11 deletion (DiGeorge or velocardiofacial syndromes), evaluation and management of children with birth defects, mental retardation and developmental delays
MBBS Degree: Kasturba Medical College (India), 1982
MD Degree: Pediatrics, Kasturba Medical College (India), 1986
Residency: Pediatrics, Kasturba Medical College (India), 1983-1986
Pediatrics, Royal Aberdeen Children's Hospital (Scotland), 1988-1989
Pediatrics, Wake Forest University (North Carolina), 1991-1992
Fellowship: Clinical Genetics, University of Virginia, 1992-1995
Other: Diploma, Child Health, Kasturba Medical College (India), 1985



David A. Turner, MD
Critical Care Medicine

Particular Clinical Interests and Skills: Pediatric critical care medicine
MD Degree: Baylor College of Medicine (Texas), 2001
Residency: Pediatrics, Baylor Affiliated Hospitals (Texas), 2001-2005
Fellowship: Pediatric Critical Care Medicine, Children's Hospital Boston (Massachusetts), 2005-2008



Brian P. Vickery, MD
Allergy and Immunology

Particular Clinical Interests and Skills: Care of children with allergic and immunologic disorders, especially food allergy, atopic dermatitis, and anaphylaxis
MD Degree: Medical College of Georgia School of Medicine, 2001
Residency: Pediatrics, New York-Presbyterian Hospital Weill Cornell Medical Center, 2001-2005
Fellowship: Allergy and Clinical Immunology, Yale University School of Medicine (Connecticut), 2005-2008



James L. Wynn, MD
Neonatology

Particular Clinical Interests and Skills: Care of premature and critically ill infants, neonatal sepsis, immunology and immunomodulation, physician teaching and development
MD Degree: University of Florida College of Medicine, 2002
Residency: Pediatrics, Shands Teaching Hospital, University of Florida, 2002-2005
Fellowship: Neonatology, Shands Teaching Hospital, University of Florida, 2005-2008

PSYCHIATRY



Rachel E. Dew, MD
Child and Adolescent
Psychiatry

Particular Clinical Interests and Skills: General and child and adolescent psychiatry, mood disorders, ADHD
MD Degree: West Virginia University School of Medicine, 2000
Residency: General Psychiatry, Wake Forest University (North Carolina), 2000-2003
Child and Adolescent Psychiatry, Wake Forest University (North Carolina), 2003-2005
Fellowship: Religion/Health Research, Duke University, 2005-2007
Other Degree: MHS, Clinical Research, Duke University, 2007



Mehul V. Mankad, MD
Biological Psychiatry

Particular Clinical Interests and Skills: Medico-legal consultation, expert witness testimony, independent medical examination, general outpatient psychiatry, electroconvulsive therapy
MD Degree: Northwestern University Feinberg School of Medicine (Illinois), 1998
Residency: Psychiatry, Duke University Medical Center, 2002
Fellowship: Forensic Psychiatry, Rush-Presbyterian-St. Luke's Medical Center (Illinois), 2003



Michelle J. Pearce, PhD
Medical Psychology

Particular Clinical Interests and Skills: Cognitive behavioral therapy for bipolar disorder, depression, anxiety disorders, eating disorders, obesity and chronic pain, mindfulness, relaxation skills
PhD Degree: Clinical Psychology, Yale University (Connecticut), 2007
Residency: Medical Psychology, Duke University Medical Center, 2006-2007
Fellowships: Clinical Fellowship, Cognitive Behavioral Therapy, Duke University Medical Center, 2007-2008
Research Fellowship, Spirituality, Theology, and Health, Duke University Medical Center, 2007-2008



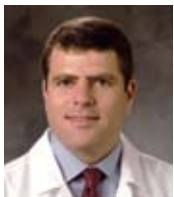
Marla F. Wald, MD
Child and Adolescent
Psychiatry

Particular Clinical Interests and Skills: Eating disorders, women's reproductive issues and mental health, child/adolescent/adult consultations and treatment, individual psychotherapy and psychoanalysis
MD Degree: Lille Catholic University Faculty of Medicine (France), 1988
Residency: Adult Psychiatry, New York University Medical Center, 1988-1991
Fellowship: Child/Adolescent Psychiatry, George Washington University and Children's National Medical Center (Washington, D.C.), 1991-1993

RADIATION ONCOLOGY



Janet K. Horton, MD
Radiation Oncology
Particular Clinical Interests and Skills: Radiotherapy for women with breast cancer
MD Degree: Wake Forest University School of Medicine (North Carolina), 2001
Residency: Radiation Oncology, UNC Hospitals, 2002-2006



David G. Kirsch, MD, PhD
Radiation Oncology
Particular Clinical Interests and Skills: Bone and soft-tissue sarcomas
MD Degree: Johns Hopkins University School of Medicine (Maryland), 2000
Residency: Internal Medicine, Greater Baltimore Medical Center (Maryland), 2000-2001
 Radiation Oncology, Massachusetts General Hospital, 2001-2005
Other Degree: PhD, Cellular and Molecular Medicine, Johns Hopkins University (Maryland), 2000

RADIOLOGY



Karen S. Johnson, MD
Breast Imaging
Particular Clinical Interests and Skills: Early detection of breast cancer using a multimodality approach
MD Degree: Loyola University Chicago Stritch School of Medicine (Illinois), 2001
Residency: Diagnostic Radiology, George Washington University (Washington, D.C.), 2001-2006
Fellowship: Breast Imaging, Duke University Medical Center, 2006-2007
Other Degree: MS, Zoology, Miami University (Ohio), 1995



Ramsey K. Kilani, MD
Neuroradiology
Particular Clinical Interests and Skills: MRI and CT of the brain and spine, CT- and fluoroscope-guided spine procedures, angiography
MD Degree: University of Arizona College of Medicine, 2002
Residency: Diagnostic Radiology, Duke University Medical Center, 2003-2007
Fellowship: Neuroradiology, Duke University Medical Center, 2007-2008



Amy M. Neville, MD
Abdominal Imaging
Particular Clinical Interests and Skills: Abdominal imaging
MD Degree: Wayne State University School of Medicine (Michigan), 2002
Residency: Diagnostic Radiology, Cleveland Clinic (Ohio), 2007
Fellowship: Abdominal Imaging, Duke University Medical Center, 2008

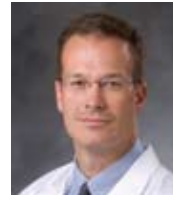
SURGERY



Dan G. Blazer III, MD
General Surgery
Particular Clinical Interests and Skills: Diagnosis and surgical management of solid tumors, including colorectal, hepatobiliary, and pancreatic malignancies; soft-tissue sarcomas and regional perfusion strategies
Residency: General Surgery, University of Michigan, 1999-2006
Fellowship: Surgical Oncology, University of Texas MD Anderson Cancer Center, 2006-2008
 Surgical Oncology, National Cancer Institute (Maryland), 2002-2004



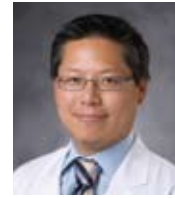
Kelli R. Brooks, MD
General Surgery
Particular Clinical Interests and Skills: Trauma surgery, care of the multi-system trauma patient, surgical critical care, gastrointestinal and general surgery
MD Degree: Duke University School of Medicine, 1999
Residency: General Surgery, Duke University Medical Center, 2006
Fellowship: Surgical Critical Care, Duke University Medical Center, 2007



Jeffrey G. Gaca, MD
Cardiovascular and Thoracic Surgery
Particular Clinical Interests and Skills: Adult cardiac surgery, thoracic aortic surgery, minimally invasive approaches to valvular heart disease
MD Degree: Columbia University College of Physicians and Surgeons (New York), 1998
Residency: General Surgery, Duke University Medical Center, 1998-2005
Fellowship: Cardiothoracic Surgery, Duke University Medical Center, 2005-2008



Peter M. Grossi, MD
Neurosurgery
Particular Clinical Interests and Skills: General neurosurgery including surgery of the brain and spine, with special interest in primary or metastatic brain tumors, minimally invasive surgery of the brain and spine, surgery of the skull base (including acoustic neuromas, meningiomas, pituitary tumors), microsurgery for trigeminal neuralgia and hemifacial spasm, complex spine surgery including spinal fusion
MD Degree: Duke University School of Medicine, 2002
Residency: General Surgery, Duke University Medical Center, 2002-2003
 Neurosurgery, Duke University Medical Center, 2003-2008
Fellowship: Neuro-Oncology, Duke University Medical Center, 2005-2006



Erich S. Huang, MD, PhD
General Surgery
Particular Clinical Interests and Skills: Breast cancer, research interest in solid tumor gene expression analysis, oncogenic pathway analysis, computational and systems biology
MD Degree: Duke University School of Medicine, 2003
Residency: General Surgery, Duke University Medical Center, 2003-2008
Other Degree: PhD, Genetics, Duke University Medical Center, 2002



Brant A. Inman, MD
Urology
Particular Clinical Interests and Skills: Urologic oncology, with particular interest in robotic surgery, bladder cancer (including multimodality bladder-sparing treatments, nerve-sparing cystectomy, and neobladders), penile cancer (including multimodality penis-sparing treatment, partial and radical penectomy, and inguinal lymphadenectomy), testicular cancer (including partial and radical orchiectomy, and nerve-sparing retroperitoneal lymph node dissection), surgical management of advanced genitourinary tumors (including vena caval thrombectomy, large pelvic and retroperitoneal masses, treatment-refractory tumors, tumors invading multiple organs)
MD Degree: University of Alberta Faculty of Medicine and Dentistry (Canada), 2000
Residency: Urology, Laval University (Canada), 2005
Fellowship: Urologic Oncology, Mayo Clinic (Minnesota), 2008
Other: Fellow, Royal College of Surgeons of Canada



Walter T. Lee, MD
Otolaryngology-Head and Neck Surgery

Particular Clinical Interests and Skills: Head and neck cancer, tumors of the head and neck, immunotherapy research
MD Degree: George Washington University Medical Center (Washington, D.C.), 1999
Residency: Otolaryngology-Head and Neck Surgery, Cleveland Clinic (Ohio), 1999-2005
Fellowship: Oncology Research, Cleveland Clinic (Ohio), 2006



Howie Levinson, MD
Plastic Surgery

Particular Clinical Interests and Skills: Broad range of reconstructive and aesthetic surgery
MD Degree: University of Texas Medical Branch School of Medicine, 1997
Residency: General Surgery, Brookdale University Hospital (New York), 1997-2005
Plastic Surgery, Duke University Medical Center, 2007
Fellowship: Plastic and Reconstructive Surgery, Duke University Medical Center, 2005-2008

Craig A. Mangum, MD
Emergency Medicine

Particular Clinical Interests and Skills: Trauma resuscitation, resident education, procedural sedation
MD Degree: Louisiana State University School of Medicine, 2005
Residency: Emergency Medicine, Maricopa Medical Center (Arizona), 2008



John Migaly, MD
General Surgery

Particular Clinical Interests and Skills: Surgical treatment of colon and rectal cancer, Crohn's disease, ulcerative colitis, diverticulitis, benign anorectal diseases, laparoscopic colon and rectal surgery, sphincter-saving procedures, ileal-pouch procedures
MD Degree: New York University School of Medicine, 1996
Residency: General Surgery, Temple University Health Sciences Center (Pennsylvania), 1997-2004
Fellowship: Colon and Rectal Surgery, Cleveland Clinic (Florida), 2005



Cyrus J. Parsa, MD
Cardiovascular and Thoracic Surgery

Particular Clinical Interests and Skills: Adult cardiac surgery, coronary artery disease and valvular heart surgery, general thoracic surgery
MD Degree: Albany Medical College (New York), 1998
Residency: General Surgery, University of California, San Francisco, 1998-2005
Fellowship: Cardiothoracic Surgery, Duke University Medical Center, 2005-2008
Other Degree: MHS, Clinical Research, Duke University, 2008-2010

Luna C. Ragsdale, MD
Emergency Medicine

Particular Clinical Interests and Skills: Geriatric emergency medicine, transitions of care
MD Degree: George Washington University School of Medicine and Health Sciences (Washington, D.C.), 2003
Residency: Emergency Medicine, East Carolina University (North Carolina), 2006
Fellowship: Geriatric Emergency Medicine, Brown University (Rhode Island), 2008
Other Degree: MPH, Community Health Sciences-Gerontology, University of Illinois at Chicago, 1996



Debra L. Sudan, MD
General Surgery

Particular Clinical Interests and Skills: Abdominal organ transplantation, intestinal failure, pediatric transplantation, intestinal transplantation, intestinal lengthening surgery (STEP and Bianchi) for patients with short bowel syndrome, laparoscopic liver resection, open hepatobiliary surgery
MD Degree: Wright State University Boonshoft School of Medicine (Ohio), 1989
Residency: General Surgery, Wright State University (Ohio), 1994
Fellowship: Solid Organ Transplantation, University of Nebraska, 1996



Ranjan Sudan, MD
General Surgery

Particular Clinical Interests and Skills: Laparoscopic surgery, bariatric and GI surgery, robotic surgery
MD Degree: Armed Forces Medical College (India), 1981
Residency: Surgery, Wright State University (Ohio), 1999
Fellowship: Child and Adolescent Psychiatry, Columbia University (New York), 1993



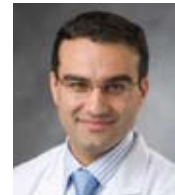
Julie K. Marosky Thacker, MD
General Surgery

Particular Clinical Interests and Skills: Surgical treatment of primary and recurrent colon and rectal cancer, laparoscopic colon and rectal surgery, surgical management of inflammatory bowel disease, polyposis syndromes, complex pelvic tumors and anorectal disease
MD Degree: Indiana University School of Medicine, 1998
Residency: General Surgery, University of Utah Health Sciences Center, 1998-2004
Fellowship: Colon and Rectal Surgery, Mayo Clinic (Minnesota), 2005



Samuel S. Wellman, MD
Orthopaedic Surgery

Particular Clinical Interests and Skills: Primary hip and knee replacement, revision hip and knee replacement, unicompartmental knee replacement, hip resurfacing, hip arthroscopy, AVN of the hip
MD Degree: Duke University School of Medicine, 2002
Residency: Orthopaedics, Duke University Medical Center, 2002-2007
Fellowship: Adult Reconstruction, New England Baptist Hospital (Massachusetts), 2007-2008



Ali R. Zomorodi, MD
Neurosurgery

Particular Clinical Interests and Skills: General neurosurgery, cerebrovascular and skull-base surgery, endovascular neurosurgery, acute treatment of cerebrovascular occlusive disease
MD Degree: Duke University School of Medicine, 2000
Residency: Neurosurgery, Duke University Medical Center, 2000-2006
Fellowship: Endovascular Neurosurgery, Duke University Medical Center, 2006-2008

on the spot

Q: Deciding to take a new job in a new city is a big step—even more so when two people are involved. What made you two decide to come to Duke?

A: We were both very happy, successful, and settled in Omaha and had never considered moving anywhere despite other opportunities. But Duke was an incredible opportunity for many reasons, including the Department of Surgery's excellent leadership, the wonderful interactions we had with future collaborators and partners, and the wealth of talented, motivated people who have great institutional pride and who want to be the best in what they do. Duke felt like a good personality fit for both of us, and neither of us felt like we were compromising our careers for the other's sake by coming here.

— Debra L. Sudan, MD, and Ranjan Sudan, MD



When you establish a charitable gift annuity with Duke Medicine, you become a partner in research that saves lives—in our community and around the world.

WITH YOUR GIFT of cash or stocks, Duke will establish a charitable gift annuity in your name and pay you a lifetime annuity. Upon your passing, the remaining funds provide philanthropic support for Duke Medicine.



“In light of the current downturn in the U.S. economy, Duke Medicine’s charitable gift annuity program may be an effective way to continue your philanthropic support and provide increased lifetime income for yourself. Your annuity will be backed by all the assets of Duke University. If you would like information about this form of giving, please contact me.”

—Joseph W. Tynan, JD
 Director of Gift and Endowment Planning
 Duke Medicine Development and Alumni Affairs
 512 S. Mangum Street, Suite 400
 Durham, NC 27701-3973
 919-667-2506
tynan002@mc.duke.edu
dukemedicine.org/giving

SAMPLE DUKE ANNUITY RATES

SINGLE PERSON	
Age	Rate
65	5.3%
70	5.7%
75	6.3%
80	7.1%
MARRIED COUPLE	
Age	Rate
65/65	4.9%
70/70	5.2%
75/75	5.6%
80/80	6.1%



CONTINUING MEDICAL EDUCATION AT DUKE For more information on the courses listed below, please contact the Duke Office of Continuing Medical Education at 919-401-1200 or visit cme.mc.duke.edu.

2009 DUKE CME CALENDAR

COURSE	DATE	LOCATION	CREDIT	REGISTRATION		
ANESTHESIOLOGY						
Winter Anesthesia and Critical Care Review	March 1-7	Park City, UT	26 credits	anesthesiology.duke.edu	ON SITE	
2nd Great American Fluid Debate	March 12-13	San Diego, CA	14 credits	anesthesiology.duke.edu		
Preceptorship in Intraoperative Transesophageal Echocardiography	March 16-18 April 6-8 May 4-6 June 22-24	Durham, NC	27 credits	cmetracker.net/DUKE/courses.html		
Ultrasound-Guided Regional Anesthesia Preceptorship	March 16-18 April 13-15 May 11-13 June 1-3	Durham, NC	20 credits	cmetracker.net/DUKE/courses.html		
2nd Annual Emerging Technologies in the OR	June 7-11	Lake Buena Vista, FL	18 credits	anesthesiology.duke.edu		
12th Annual Cardiothoracic Update and TEE Board Review Course	June 18-21	Hilton Head Island, SC	29 credits	anesthesiology.duke.edu		
INTERDISCIPLINARY						
Women of Color & HIV: 2nd Annual Community Forum	March 6	Durham, NC	4.5 credits	cmetracker.net/DUKE/courses.html		
NEUROLOGY						
Duke Pediatric Neurology Update: Demystifying Child Neurology	February 21	Durham, NC	7.5 credits	cmetracker.net/DUKE/courses.html		
Use of Botulinum Toxin in Dystonia and Related Disorders	March 6	Durham, NC	6 credits	cmetracker.net/DUKE/courses.html		
Advanced EMG & EMG-Guided Chemodeneration	March 13-15	Durham, NC	19.25 credits	cmetracker.net/DUKE/courses.html		
PEDIATRICS						
Katz-Wilfert Update in Pediatric Infectious Diseases	April 25	Durham, NC	7.5 credits	cmetracker.net/DUKE/courses.html		
RADIOLOGY						
25th Annual Duke Radiology Review Course	April 18-24	Research Triangle Park, NC	55.25 credits			
A Practical Approach to Musculoskeletal MRI	April 25-28	Washington, DC	19 credits	radiology.duke.edu		
Mammograms to MRI: Breast Imaging and Interventions 2009	March 20-22	Atlanta, GA	18.5 credits	Debbie Griffin, 919-684-7228 or deborah.griffin@duke.edu		
Mammograms to MRI: Breast Imaging and Interventions 2009	June 15-18	Kiawah Island, SC	18.5 credits			
COURSE	DATE	CREDIT	REGISTRATION			
HIV Clinical Directions: Clinical Information for Physicians Treating HIV/AIDS, Issue 3	Through February 28	1.5 credits	cmetracker.net/DUKE/courses.html	ONLINE		
13th Annual Duke ACS Symposium: Raising the Bar—Evidence-Based Antithrombotic Therapy in ACS (Webcast Archive)	Through March 27	1.75 credits	thrombosisclinic.com			
Silence Is Suicide: Frontline HIV/AIDS Treatment for African Americans	Through April 29	1.5 credits	cmetracker.net/DUKE/courses.html			
Advances in Treating Renal Cell Carcinoma, Issue 1	Through April 29	1.5 credits	cmetracker.net/DUKE/courses.html			
Duke Clinical Medicine Series 2009: Nephrology Conference	Through July 24	0.5 credits	dcri.org			
Duke Clinical Medicine Series 2009: Endocrinology Conference	Through July 24	0.5 credits	dcri.org			
Duke Clinical Medicine Series 2009: Cardiology Conference	Through July 24	0.5 credits	dcri.org			
Advances in Treating Renal Cell Carcinoma: Clinical Case Studies, Volume 1, Number 2	Through July 30	1.5 credits	cmetracker.net/DUKE/courses.html			
DCMS in Asheville: Web Archive	Through July 31	0.5 credits	dcri.org			
Managing Adolescent Depression in Primary Care: Assessing the Benefits and the Risks	Through September 23	1 credit	pediatrics.duke.edu			
Signposts and Pathways: Multidimensional Care for Patients with Type 2 Diabetes, Online Cases	Through September 28	0.75 credits	ja-online.com/dukediabetes/cases/case1/index.html			
Signposts and Pathways: Multidimensional Care for Patients with Type 2 Diabetes	Through July 30, 2010	3 credits	ja-online.com/dukediabetes/info/cme.html			

These activities have been approved for *AMA PRA Category 1 Credits*.

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HEARING HERO

After trips to India, where vaccine-preventable illness has rendered millions deaf, and years of treating children and adults close to home, Duke neurotologist **Debara Tucci, MD**, knows firsthand what a big problem hearing loss is. Now, she and biomedical engineer Blake Wilson are orchestrating a big solution: the Duke Hearing Center. Launched in January, the ambitious center is pulling together specialists in neurobiology, otolaryngology, genetics, engineering, and other fields to understand and treat all types of hearing problems, at home and abroad. "I think we will be able to make a tremendous difference in people's lives," Tucci says.

Read more on page 36.

