ADVANCES IN RESEARCH, EDUCATION, AND PATIENT CARE AT DUKE

DukeMed MAGAZINE

VOLUME 5
ISSUE 2
FALL/WINTER 2005

The X Factor

THE WOMEN'S HEALTH ISSUE

A celebration of innovation

ANNIVERSARIES ARE TYPICALLY a time to honor tradition. This year, I have had the pleasure of participating in several events commemorating the 75th anniversary of medicine at Duke, and I have enjoyed hearing the perspectives and memories of many faculty, alumni, employees, and friends who helped make Duke Medicine what it is today.

At Duke, however, I think we must also honor our ambition—because that is what has made us one of the nation's most distinguished and dynamic medical institutions.

Indeed, Duke has been driven by a spirit of innovation ever since James B. Duke first dreamed of creating a new medical institution in the Carolinas. This is a place where new approaches to medicine and health care are developed and then put into practice to improve people's lives.

In medical education, we conducted a bold experiment in the 1960s with our curriculum, compressing basic science into one year instead of two and carving out a full year for independent research. The experiment succeeded handsomely. Duke is now known as a place that produces leaders and visionaries—our alumni have included a director of the National Institutes of Health, a president of the National Academy of Sciences, and the founding dean of three medical schools, among many others. Our signature curriculum, recently updated for the 21st century, is today serving as the basis for a new Graduate Medical School in Singapore that will train a new generation of physician-scientists in Asia.

Duke has been driven by a spirit of innovation ever since James B. Duke first dreamed of creating a new medical institution in the Carolinas.

In research, Duke has made seminal contributions over the years. Our scientists' contributions have paved the way for the contemporary understanding of cell function and human therapies, ranging from the characterization of 7-membrane-spanning receptors, to the discovery of superoxide dismutase, to the mechanisms of DNA repair, to the pioneering use of cord blood stem cells for treatment of genetic disorders, to the development of the Duke Clinical Research Institute. Today, we are placing new emphasis on translating basic discoveries into practical applications that will greatly impact human health. At the same time, through efforts led by our new vice chancellor for science and technology, Nobel Laureate Peter Agre, we are taking a leadership role in influencing science and technology public policy and working to improve science and math education in the public schools.

Benefiting society has always been Duke's goal, and we can all be proud of this institution's longstanding contributions to the community, from providing charity care at a cost of millions of dollars each year to developing new models for delivering care to the underserved. Such efforts will only expand in the future. Just in the past 18 months, we began a Global Health Initiative that is bringing together expertise from many disciplines across the university to address health disparities at home and abroad. Our trainees will be "movers and shakers" everywhere in the world, delivering much-needed service, developing new therapies such as vaccines for emerging infections, establishing new public health measures, and influencing policies. Duke's leadership in the new $300-million Center for HIV/AIDs Vaccine Immunology (see page 5) and other efforts with global reach give us great capacity to make an impact on world health.

Although we certainly have done much to be proud of over the past 75 years, there is one thing we do not do well—rest on our laurels. Like those who came before us, we continue to think big, to go beyond the ordinary, to remind ourselves that there's always a larger context. And that is why I know that we will continue to innovate and improve the quality of health care here at home and around the world for decades to come. It has been a wonderful first 75 years, but I believe that Duke's greatest adventures are still ahead.

VICTOR J. DZAU, MD
JAMES B. DUKE PROFESSOR OF MEDICINE
CHANCELLOR FOR HEALTH AFFAIRS,
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DUKE UNIVERSITY HEALTH SYSTEM

DukeMed MAGAZINE
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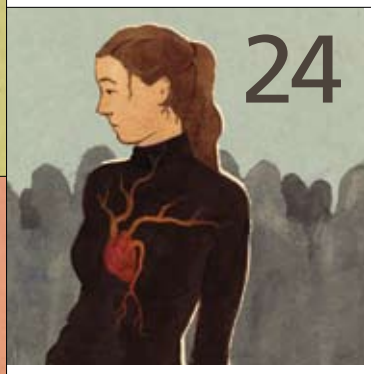
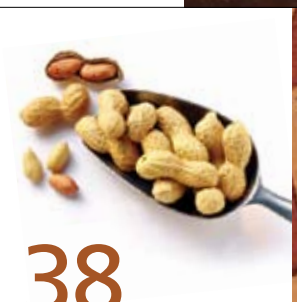
Egg hunters

Making babies goes high-tech.

Women take heart

A team of female cardiologists bands together to help women fight cardiac disease.





The disease that whispers

Tracking one of stealthiest diseases in oncology: ovarian cancer.

Allergy action

Food allergies have proliferated in recent years—but one Duke doctor is working to make them history.

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DUKE
MEDICINE

75

EST. 1930

A distinguished past. An exciting future.

Since the opening of our School of Medicine and Hospital in 1930 and School of Nursing in 1931, the people of Duke Medicine have striven to advance the quality and span of human life through innovation in clinical care and research, educate tomorrow's leaders in health care, meet the needs of the different communities we serve, and provide compassionate care to the poor and underserved. As we celebrate our 75th year and look to the future of medicine, Duke is proud to carry on these traditions upon which our success has been built.

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WILL MCINTYRE

Duke in Singapore

by R. Sanders Williams, MD
Dean, Duke University School of Medicine
Vice Chancellor for Academic Affairs

THIS PAST APRIL, Chancellor for Health Affairs Victor J. Dzau and I signed an agreement with the government of Singapore that opens a new chapter in Duke history—the creation of a new Graduate School of Medicine (GMS) in Asia. This school, affiliated with the National University of Singapore and backed by a $300 million investment from the Singaporean government, will be based on the Duke medical curriculum and dedicated to preparing superlative students for careers as leaders and scholars in medical research, education, and patient care.

I have to admit that just a few years ago, when I first heard that Duke was considering a major project in Singapore, I was dubious. I wondered how in the world could we maintain a serious program halfway around the world when there are so many important things to do here in Durham. Since then, however, I have met some of the remarkable people involved. I have visited and seen the inner workings of the society. As a result, I went from being highly skeptical to highly enthusiastic about this new adventure—and I am now convinced that this partnership will greatly advance medical education, research, and care both at Duke and in Singapore.

The overarching goal of the venture is to create a new medical school in Asia that will be on a par with the very best centers of the world. As the country's first graduate medical school—existing programs in the area are based on the British model of undergraduate medical education—the school will be instrumental in developing a new generation of physician-scientists in Asia. Our partners are also counting on us to facilitate closer collaboration between their research institutes, hospitals, and the university; to attract foreign talent; and to generate ideas for medical innovation. These are familiar goals, consistent with our activities at home.

For Duke, our overarching goal is to expand the global reach and reputation of the University, and in so doing to expand our capabilities to meet the standards of success we have set for ourselves at home: notable discoveries in biomedical science; proof of principle in humans and landmark clinical trials; leading innovation in medical education, practice, and policy; preparing students to become leaders and scholars; and a global presence with local impact.

The new Graduate Medical School became a reality in August 2005 with the opening of its temporary quarters in a charming quadrangle of red tile-roofed buildings on a campus shared with Singapore General Hospital (which will serve as the school's primary teaching hospital). Of course, much work remains to be done, and in the past several months leaders from Duke and Singapore have visited both sites to advance the GMS. Among our major priorities are to prepare for our first entering class, scheduled to matriculate in fall 2007, and plan for the school's permanent facilities, to be constructed by 2009.

As founding dean of the new school, a position I will hold concurrently with the deanship here at Duke until a permanent GMS dean is named, I am actively participating in these efforts, and am pleased to report the goodwill and genuine enthusiasm of the GMS staff and supporters on both sides of the globe. Creating a new medical school is no small task, but with our collaborative efforts, it will reap great rewards for all concerned.

For more information on the Duke-Singapore partnership, please visit medschool.duke.edu.

On the ground, after the flood

Duke volunteers help set up a field hospital for victims of Hurricane Katrina

FOR MELISSA SUPPLES, a registered nurse at Duke's Durham Regional Hospital (DRH), it was the frightened 10-year-old girl hurt in a car accident on her birthday and cradling her injured puppy in the back of an ambulance.

For Kelly Blackman, an emergency medical technician with Duke Life Flight in Johnston

County, it was the grandfather who escaped raging floodwaters with his two young grandchildren by breaking through the roof with his bare hands and then clinging to a tree for hours.

For Robert Leeds, a pharmacist at DRH, it was a mother and her four young daughters living in a one-room shelter they constructed from storm debris after their home was destroyed.

For the three volunteers who treated patients devastated by Hurricane Katrina, these are the images that linger. Supples, Blackman, and Leeds were part of the Duke Regional Advisory Committee (RAC) State Medical Assistance Team (SMAT) sent to Waveland, Mississippi, on September 2 as part of North Carolina's response to the disaster. The Duke RAC team includes volunteers from hospitals and emergency medical services agencies in Durham, Granville, Person, Scotland, Wake, Caswell, Robeson, and Johnston counties.

The nine-member team helped set up a 100-bed field hospital in a K-Mart parking lot as part of the state deployment, which included Carolinas Medical Center's MED-1 mobile hospital. It was the first deployment for the Duke SMAT, but Claudia McCormick, director of the Duke Trauma Center Program with Duke Hospital Emergency Services, says the team members had trained extensively over the last nine months as one of eight regions in the N.C. Regional Trauma System. The trauma center manages the Duke SMAT team.

"Once the first team got there they were seeing patients in three hours," she says. "In the days that followed they were seeing 150 to 300 patients a day and living in primitive conditions, but getting the job done. I'm extremely proud of them."

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>
> —Claudia McCormick, director, Duke Trauma Center Program

Although the first team returned September 9, Duke RAC continued to send teams of trained volunteers to the area through the N.C. Office of Emergency Medical Services through October. A separate team from Duke provided health care services to hurricane victims in Meridian, Long Beach, and other Mississippi communities. Those team members returned to Durham on September 16 as many Gulf hospitals became operational.

SMAT team member Leeds said the field hospital served a six-county area that was completely devastated. The team could only bring limited supplies, but Leeds and others salvaged medical equipment from a destroyed local hospital and were aided by emergency personnel, religious groups, and good Samaritans who helped them find additional medical equipment and supplies.

Registered nurse Larry Tucker, a Regional Disaster Preparedness coordinator and Duke SMAT coordinator, served with the first and second deployments. "It was truly amazing to see a group of people from eight trauma regions across the state thrown together for the first time in terrible conditions, with minimal sleep and marginal equipment, and within hours they were a fully functional medical treatment team," he says. "The Duke SMAT is strong; it will get stronger and it will be one of the best disaster medical teams in the country before long."

"It was a tremendous effort," agrees Tracy Stell, a registered nurse and emergency medical technician in charge of education at the DRH Emergency Department. "I'm more proud of this than anything I've ever done professionally. We were in totally uncharted territory since it was the first deployment for the Duke SMAT. We really showed it worked. We built a field hospital, treated patients, and were able to really make a difference in people's lives."

Read firsthand accounts of Duke SMAT's hurricane relief efforts at dukemedteams.blogspot.com.

Duke researcher to lead $300M HIV vaccine initiative

"With this award, our CHAVI team will work with the HIV research community in a new model that places great emphasis on coordination and synergy."

—Barton Haynes, MD

DUKE UNIVERSITY MEDICAL CENTER professor Barton Haynes, MD, will lead the Center for HIV/AIDS Vaccine Immunology (CHAVI), a consortium of universities and academic medical centers established July 14 by the National Institute of Allergy and Infectious Diseases (NIAID).

CHAVI will receive $15 million in its first year and may receive more than $300 million in total over seven years, according to NIAID, part of the National Institutes of Health (NIH). CHAVI's mission is to address major obstacles to HIV vaccine development and to design, develop, and test novel HIV vaccine candidates.

NIAID established CHAVI in response to recommendations of the Global HIV Vaccine Enterprise, a virtual consortium endorsed by world leaders at a G-8 summit in June 2004. The Global HIV Vaccine Enterprise was originally proposed by Haynes, NIAID Director Anthony Fauci, Richard Klausner, executive director of the global health program for the Gates Foundation, and other prominent HIV vaccine researchers and public health officials in a June 2003 commentary in *Science* magazine.

Haynes, a professor of medicine and director of the Human Vaccine Institute at Duke, has studied HIV for more than 15 years. He is an internationally recognized leader in basic T- and B-cell immunology, retrovirus research, and HIV vaccine development.

"Making a vaccine for AIDS has turned out to be more difficult than we ever anticipated," Haynes says. "With this award, our CHAVI team will work with the HIV research community in a new model that places great emphasis on coordination and synergy."

CHAVI researchers will focus on solving several unanswered questions about HIV, including how the virus interacts with the body during the earliest stages of infection; designing, developing, and testing improved vaccines; and evaluating promising HIV vaccine candidates in small-scale clinical trials. CHAVI will also fund a large-scale study to determine how the immune system of the macaque monkey fends off SIV, the macaque equivalent of HIV.

NIH numbers

DUKE UNIVERSITY SCHOOL OF MEDICINE finished in **sixth** place among the nation's top National Institutes of Health (NIH)-funded medical schools in fiscal year 2004, according to the federal agency's latest figures released in July. Duke's medical school garnered 662 NIH awards, for a total of $304.7 million. The School of Nursing also increased its NIH funding, moving from #32 in the nation to #23 among schools of nursing. It received more than $1.8 million in research and training grants.

Navigating cancer care

A PROGRAM AT THE DUKE Health Raleigh Cancer Center (DHRCC) is helping oncology patients steer the course of their treatments. The Patient Navigator Program offers one-on-one assistance, from scheduling appointments and communicating with physicians to providing educational information and answering questions. And sometimes just listening.

The program was developed as an answer to requests from the center's physicians and surgeons for help in managing increasingly complex treatment plans. It's a boon to referring physicians as well, since the program serves as a central location for information on their patients.

Currently DHRCC has two patient navigators: Julie McQueen and Brenda Wilcox. McQueen is a certified health education specialist and two-time breast cancer survivor, and Wilcox is an RN with an oncology nursing certification. Both have more than 20 years of professional experience and have completed a breast health educator training and certification program.

"Having gone through cancer myself, when so many people helped me, I wanted to give back. I wanted to work with cancer patients," says McQueen.

One of the hardest parts of having cancer is the waiting, McQueen notes—waiting to have tests, waiting for the results of tests, waiting to see doctors, waiting for treatment. Reducing those wait times is one of the program's primary goals. The patient navigator works with the physicians and labs to coordinate exam and testing, scheduling them on the same day if possible. A follow-up phone call helps ensure that the patient understands what each test is for and what the results mean.

Gena Ram, a breast cancer survivor first referred to DHRCC in fall 2004, is a strong proponent of the program. "Julie [McQueen] was the voice of calm," Ram says. "The fact that she is a breast cancer survivor made me feel that she knew exactly what I was going through. She was my anchor in a very choppy sea."

Learn more at dukehealthraleigh.org

The patient navigator works with the physicians and labs to coordinate exam and testing, scheduling them on the same day if possible. A follow-up phone call helps ensure that the patient understands what each test is for and what the results mean.

Transatlantic transfer

Sisters injured in the London bombings come to Duke for care

Emily and Katie Benton of Tennessee were on the London Underground when a bomb exploded less than 10 feet away from them. The sisters were treated at Duke for shrapnel wounds, broken bones, and extensive skin damage. "Duke is the greatest," Katie said at a July 22 news conference following their release. "Everybody has been awesome."

CINDY DETOMO VIVIDLY remembers her first conversation with Patty Benton, just one day after Benton's two daughters were wounded in the July 7 London terrorist bombings. "She said 'You've got to get them home,'" recalls Detomo, a triage nurse in the Duke University Hospital Transfer Center. "Something clicked inside me as a mother and a former Duke Life Flight nurse, and I knew we wouldn't rest until we did. I told her not to worry because they had become my children now, and that we were going to bring them home in time for surgery."

Benton's daughters, Katie, 21, and Emily, 20, both Tennessee college students, had just stepped onto a London Underground subway car July 7 when a bomb exploded only feet away. Emily suffered the most serious injuries from the bomb blast during terrorist attacks that killed at least 56 people. She had bone and soft tissue injuries to a foot and a fractured hand. Katie suffered from soft tissue injuries to a foot, ankle, and hand. Both had facial injuries and eardrum damage.

A surgeon in Knoxville had recommended Duke to the Benton sisters' parents because of its expertise in microvascular free tissue transfer—surgically transferring tissue from one part of the body to another—and its proximity. Within hours, thanks to the efforts of Detomo, orthopedic surgery chief James Nunley, MD, and a host of others, Duke initiated a series of complex logistics involving collaboration with the U.S. State Department, the Office of Homeland Security, the FBI, the White House, and Scotland Yard to transport the Benton sisters to Duke for reconstructive surgery.

By Sunday, July 10—well within the critical four- to five-day window to close wounds to avoid a high risk of infection—the Duke team had evaluated the sisters and begun surgery.

Despite reams of red tape complicating the transatlantic transfer, by Sunday, July 10—well within the critical four- to five-day window to close wounds to avoid a high risk of infection—a team of Duke trauma and orthopaedic, plastic, and reconstructive surgeons, led by Gregory Georgiade, MD, and L. Scott Levin, MD, had evaluated the sisters and begun surgery. The Bentons were discharged July 22, and both are expected to make a full recovery.

Why it's good to be wired

DUKE UNIVERSITY HEALTH SYSTEM has been named one of the 100 Most Wired hospitals and health systems in the country, according to *Hospitals & Health Networks* magazine.

The winners of the 2005 Most Wired award were chosen upon review of 502 surveys, representing 1,255 hospitals across the country. "There are three key differences in how hospitals apply and use information technology to improve care," says Alden Solovy, executive editor of *Hospitals & Health Networks*, the journal of the American Hospital Association (AHA). "The Most Wired use a wider array of IT tools to address quality and safety, they have a significantly larger percentage of physicians who enter orders themselves, and they conduct a larger percentage of clinical activities via information technology."

Hospital & Health Networks also released the results of an analysis showing that those hospitals and health systems that have made a substantial investment in health information technology have lower mortality rates than other hospitals. "It's not a random observation, even if it is not necessarily cause and effect," says Kaveh Safavi, MD, of health care information firm Solucient, which conducted the analysis.

Duke has been investing in and integrating a large amount of clinical technology into the health system, including the rollout of Computerized Physician Order Entry in Duke Hospital, says Chief Information Officer Asif Ahmad. "We have long believed that a commitment to using the latest innovations in information technology can help us run a more efficient operation and provide better quality care to our patients," he says.

What a difference 75 years make

IN HONOR OF THE 75TH ANNIVERSARY OF DUKE MEDICINE, we trawled through the archives to see just how much had changed over the years. Below, a few examples of medicine at Duke—then and now.

When Duke University Hospital opened its doors on July 21, 1930, it admitted **17 patients**. A ward bed cost **$3 a day**; a visit to the Duke outpatient clinic, $2. Today, the Health System hosts some **62,000 inpatient admissions** and **1.6 million outpatient visits** per year; its annual operating revenues are **$1.4 billion**.

In late 1936, surgery chairman J. Deryl Hart, MD, originated the use of **ultraviolet radiation to control airborne infections in surgical operating rooms**. The procedure dramatically reduced the number of infections and related deaths, and won national acclaim in the late 1930s and early 1940s. Today's ORs are likewise filled with ever-evolving technology.

In 1927, School of Medicine Dean Wilburt C. Davison, MD, spent a night at the Elkin Hotel. As Davison tells the story, "I remarked at breakfast the next morning that I had one of my best nights of sleep. [Frank E.] Chapman told me that the reason was that I slept on an innerspring mattress for the first time. Like most people, I was ignorant of mattresses and enquired why similar ones could not be used in hospitals instead of the usual board-like variety. Chapman said he was sure that they could stand hospital wear but that no one had courage enough to invest the money to test them. We had both courage and money, so **Duke Hospital was the first to be equipped with innerspring mattresses**." Today, Duke has more than nine types of beds, each designed for different clinical needs.

A trip down memory lane

View more images from Duke history with a new online resource, *Foundations of Excellence: An Archival Image Collection Celebrating the 75th Anniversary of Duke Medicine*, funded in part by The Josiah Charles Trent Memorial Foundation, Inc. Created by Duke Medical Archives, the project's Web address is **archives.mc.duke.edu/foundations/index.htm**.

MA x (JD + MBA + MPP + MSN) = MHS-CL

WHEN W. KEVIN BROYLES, MD, decided to pursue more education to broaden his skills as medical director of Duke Urgent Care Services, he looked at a variety of programs. A Master of Business Administration degree seemed the obvious choice, but Broyles had reservations.

"The MBA programs I researched took a very focused approach" that wasn't quite what he was looking for, says Broyles. Then he learned about Duke's Master of Health Sciences in Clinical Leadership (MHS-CL)—a unique new graduate program designed to meet the practical needs of its clinician students. "The MHS-CL was well-rounded," says Broyles. "It delved into law, finance, policy, informatics, operations, and human resources in the clinical setting."

The program, launched with the support of The Fullerton Foundation, Inc., draws on the strengths of School of Medicine, School of Nursing, Fuqua School of Business, School of Law, and the Terry Sanford Institute of Public Policy to prepare clinicians to take leadership roles in the fast-changing health care environment.

"Addressing the complexities of the internal and external forces in health care wasn't as simple as placing students in a few key courses from across the university," says educational programs director Michelle Lyn. "We had to create an educational context that would balance theory and reality and put students in situations that would force them to synthesize the components."

"Finance for managers, negotiation, strategy, management, personnel, health law, and informatics are just some of the courses," says Susan Yaggy, chief of the Division of Community Health. "As health leaders, we are increasingly recognizing the need for effective teams, and the program is designed to promote that. As a group, the students take a seminar running the length of the program, in which they are guided through real applications of what they learn in class while meeting with state and national health leaders. They also work on a real project for a real client as a team."

Don Bradley, MD, among the program's first graduates, was looking to expand his management and leadership skills. One of the highlights for him was the School of Law segment. "Catching up with law school fundamentals, like writing a brief, assimilating a case law approach to learning, and learning to think and present like a lawyer was a mind-bending experience for me as a physician," Bradley says.

Since graduation, Bradley's job title has evolved from senior medical director of Blue Cross and Blue Shield of North Carolina (BCBSNC) to executive medical director. His approach to his leadership position has advanced as well.

"I have a broader and deeper understanding of the health care system and how a variety of stakeholders view and interact with it. In real terms, some of the concepts I learned or honed as a part of the program have helped me facilitate dramatic changes at BCBSNC to improve the process, service, and outcomes of care received by subscribers," he says.

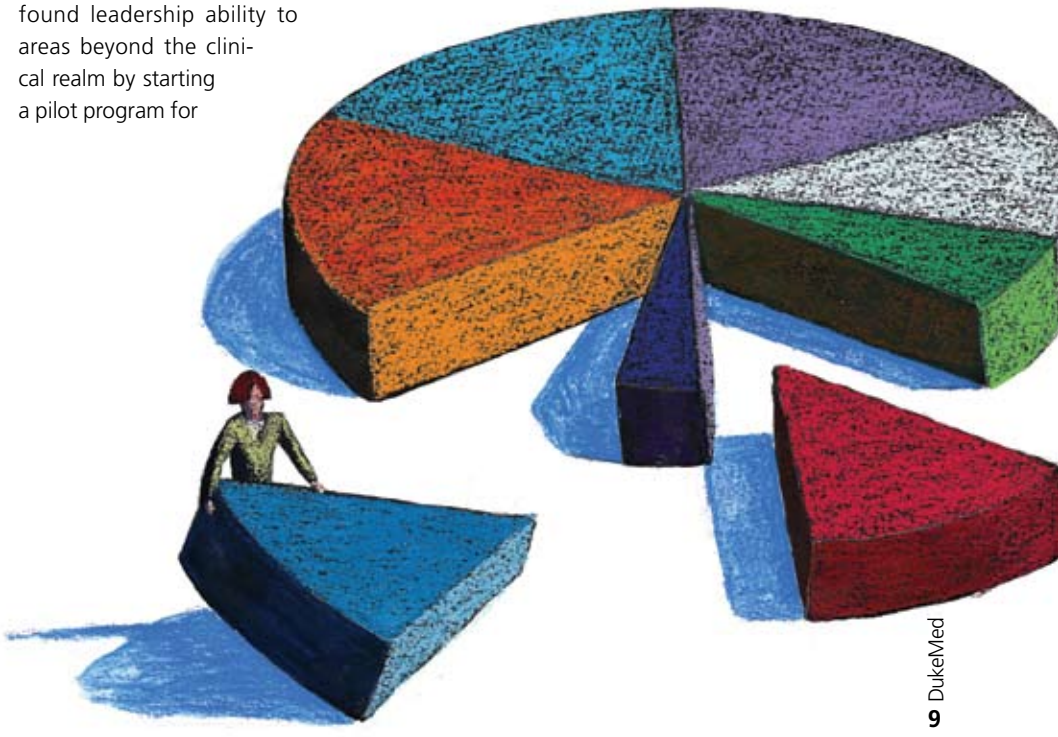
Broyles began introducing his newfound leadership ability to areas beyond the clinical realm by starting a pilot program for the international sponsorship of orphans and vulnerable children in Kenya. "I'm constantly using my skills in areas outside of work. There are many real-world applications to situations beyond the clinical," says Broyles.

Lloyd Michener, MD, chair of the Department of Community and Family Medicine and one of the MHS-CL program's earliest advocates, is pleased to hear these success stories. "The program has clearly met its goal of training clinicians for leadership roles. The students have been bright, creative, and thoughtful and have given back to Duke and their institutions far more than we have given them," he says.

Long-distance learning

Starting in fall 2006, clinicians interested in earning a Master of Health Sciences in Clinical Leadership degree but constrained by time and geography can participate in a distance-based version of the program.

For more information, visit **clinical-leadership.mc.duke.edu** or contact Michelle Lyn at **919-681-3192**.



Live from Durham … It's CME!

YOU DON'T HAVE TO TRAVEL to a medical meeting to hear some of the top specialists in internal medicine speak about timely topics in their field. Instead, you can tune in to live interactive medical education conferences, available across North America and around the globe by satellite and the Internet.

The Duke Clinical Medicine Series began in November 2004 with the first broadcast of the weekly Cardiovascular Cath Lab Conference, created and hosted by cardiologist Peter Berger, MD. These proved so successful that four new monthly conferences were added this September: Acute Coronary Syndromes, Endocrinology, Heart Failure, and Nephrology. A Gastroenterology conference will begin in January 2006, with more to follow.

Each one-hour program centers on a presentation by a distinguished guest speaker and the conference host, a Duke Clinical Research Institute (DCRI) faculty member. In addition, most programs open with a case presentation by a Duke fellow which ties in with the guest speaker's topic and is resolved at the end of the program in light of the evidence-based presentation. Following the discussion, the floor is opened to questions from the audience. Viewers of the live program can e-mail or phone in questions during the program.

The live broadcasts from the DCRI studio are available on the General Electric TiP-TV Hospital Network, via a tunable satellite dish, and with a fast Internet connection by streaming media. The archived programs are available for on-demand viewing at www.dcri.org. Here you can also find the schedule for upcoming conferences, register for Internet access, apply for CME credit, and obtain more information about receiving the live broadcasts via GE TiP-TV or satellite dish.

Pediatricians book it

SHOTS, PRESCRIPTIONS, and wise advice, yes. But *Clifford, the Big Red Dog*?

For the past few years, residents and attending physicians at several Duke pediatric clinics have been dispensing books to youngsters at well-child visits—giving out nearly 3,000 books last year alone.

The effort is part of the nationwide Reach Out and Read program, which aims to promote early literacy in order to support school readiness and success. The program focuses on lower-income children who may not have books at home. Children receive one brand-new book at each check-up from six months to five years of age to help families create their own home library. Funding for books comes from the national program as well as through local fundraisers and donations.

"During well-child visits, we talk to parents about the importance of reading to their children every day and teach them appropriate book sharing techniques and expectations for different developmental ages," says Jennifer Lawson, MD, faculty advisor to the resident-led program. "The thought is that if the encouragement to read comes from the child's doctor, it might emphasize the importance of this activity."

Even if the parents can't read themselves, families are encouraged to share books by engaging in such activities as making up stories about the pictures, Lawson adds. "It's a great way both to build their child's literacy skills and to establish a routine that strengthens the parent-child bond."

For more information, visit www.reachoutandread.org.

Vanish, veins


Cynthia Shortell, MD

THE BANE OF MANY women, varicose veins aren't just unsightly—they can also cause burdensome pain, swelling, heaviness, and even skin ulcers. Occurring when pooling blood causes veins in the leg to bulge, the condition may be caused by factors such as pregnancy and genetics. EndoVenous Laser Treatment (EVLT) offers a new, minimally invasive option for patients with this condition, getting them back on their feet sooner and with less discomfort than previously offered therapies.

The outpatient procedure begins after the patient has been given a sedative with the use of ultrasound to locate the saphenous vein—the large principal vein running up the surface of the leg—at the level of the knee. A catheter is then inserted into the vein through a small hole, and threaded up to the top of the leg. After delivery of a local anesthesia, surgeons insert the laser, which heats the vein and seals it shut. Once the main saphenous vein is closed, blood can no longer back up and cause bulbous, varicose veins, and many of the existing veins collapse spontaneously over a period of weeks after the procedure. Blood from the shut-off vein is diverted to normal veins, so the loss of this vein is not a problem.

After the laser procedure, which takes about 15 minutes, the leg is bandaged and placed in compression hose. Patients are told to walk around immediately to stimulate blood vessels and alleviate the fear of walking that some patients may feel after treatment.

Compared to previous procedures that involved multiple incisions in the leg, EVLT offers patients a quick fix to a troubling problem with little to no scarring.

Compared to previous procedures that involved multiple incisions in the leg, extensive bruising, and up to six weeks' recovery time, EVLT offers patients a quick fix to a troubling problem with little to no scarring. Most patients can manage post-operative discomfort with over-the-counter painkillers like ibuprofen, and are back at work within a week.

At Duke, EVLT is offered at the Duke Center for Aesthetic Services, a state-of-the-art outpatient facility in a private, off-campus setting. "Our practitioners who perform EVLT are board-certified vascular surgeons who are not only trained in the technical aspect of the procedure, but also understand venous disease in its entirety," says Cynthia K. Shortell, MD, chief of vascular surgery at Duke.

Shortell, who recently came to Duke from the University of Rochester, has performed over 500 endovenous procedures over the past two years and has devoted a major part of her career to caring for venous diseases. Duke surgeons Jeffrey Lawson, MD, PhD, and John Gray, MD, also perform the procedure. Recently, Duke Surgery was named a Center of Excellence for EVLT, meaning that its clinicians will be responsible for training colleagues from across the country in the procedure.

For more information, please call 919-681-2915.

Implanted defibrillators—worth the cost?

THE USE OF IMPLANTED defibrillators that keep the heart beating in proper electrical rhythm to prevent cardiac arrest appears to be cost-effective for those patients who receive a significant mortality reduction, according to researchers from Duke Clinical Research Institute (DCRI), Stanford University, and the VA Palo Alto Health Care System, California. They analyzed eight clinical trials of the devices to arrive at their conclusion.

The cost-effectiveness of these potentially life-saving implantable cardioverter defibrillators (ICD) is an important public health issue, the researchers say, since the Centers for Medicare and Medicaid Services (CMS) estimates that as many as 500,000 of its patients could be eligible to receive these expensive devices.

The results of the team's analysis demonstrated that although expensive, in appropriate patients ICDs provide value. However, given the number of patients now eligible for ICD implantation, their analysis highlighted the need for further research into which patients are at higher risk for sudden cardiac death and therefore would benefit the most from this therapy, since the devices would be the most cost-effective for these patients. The study was published October 6, 2005, in the *New England Journal of Medicine*.

Old blood thinner beats newcomer

THE RESULTS OF an international clinical trial led by Duke researchers show that a new drug, heparinase I, is not a suitable replacement for protamine. Protamine has been used for more than 40 years after coronary artery bypass surgery to return thinned blood to its normal state.

While protamine is effective in reversing the blood-thinning properties of heparin, recent studies have shown that its use can cause changes in blood pressure which have been linked to increased death rates in some patients.

The latest candidate alternative to protamine, heparinase I, deactivates heparin through a mechanism different than protamine. However, the current Phase IIB/IIIA safety and efficacy trial conducted at 47 sites in the United States, Canada, and Germany was halted early because patients receiving heparinase I had higher incidences of negative side effects, such as bleeding and infections. Trial results were published in the August 2005 *Anesthesiology*.

The skinny on obesity

Recent Duke studies have found that ...

Weight loss can improve your sex life

Losing just 10 percent of total body weight can significantly improve sexual quality of life for obese people, according to a Duke study presented at the annual meeting of the North American Association for the Study of Obesity in October.

The prevalence of obese people who reported difficulty at least sometimes in six different sexual quality of life aspects ranged from 19 to 67 percent. Women were more likely to report problems than men—women were twice as likely to say they did not want to be seen undressed and five times more likely to report not enjoying sexual activity at the start of the study.

However, on average, difficulties in all six areas of sexual quality of life investigated during the study showed improvement with weight loss, according to lead author Martin Binks, PhD, of the Duke Diet & Fitness Center. The percentage of women reporting difficulty at least sometimes dropped by as much as 50 percent on several aspects of sexual quality of life with weight loss. The improvement appeared to peak with a weight loss of approximately 11 percent, the researchers say.

Residential obesity treatment works

Residential, immersion-style obesity treatment programs can help people achieve medically significant weight loss and improve their quality of life, shows a second Duke study presented at the North American Association for the Study of Obesity meeting.

The study found that patients who stay about 24 days, on average, at a four-week treatment program focusing on lifestyle change, physical activity, and healthful eating lose almost 5 percent of their total body weight. In such programs, patients immerse themselves in a weight-loss program by staying at a treatment facility for an extended period while participating in a "day-treatment" approach to lifestyle change. The Duke Diet & Fitness Center, a residential treatment center for obesity, funded the study.

Moderate exercise fights visceral fat

A modest exercise program equivalent to a brisk 30-minute walk six times a week can prevent accumulation of visceral fat, while even more exercise can actually reduce the amount of visceral fat, shows a Duke study published in the October *Journal of Applied Physiology*. The study—the first randomized clinical trial evaluating the effects of exercise amount and intensity in sedentary overweight men and women—also found that the control group that did not exercise saw a sizable and significant 8.6 percent increase in visceral fat in only six months.

Visceral fat, which accumulates around the organs inside the belly, particularly concerns physicians because increased levels have been associated with insulin resistance, cardiovascular disease, and other metabolic syndromes.

Visceral fat, which accumulates around the organs inside the belly, particularly concerns physicians because increased levels have been associated with insulin resistance, cardiovascular disease, and other metabolic syndromes.

Muscles in the obese store more fat

The gene encoding an enzyme that hinders muscle from burning fat manufactures three times more enzyme in the muscle of obese people than lean people, researchers from Duke and Louisiana State University have found. This causes the obese muscle tissue to both store more fat and burn less fat, the researchers say.

"Obesity is a very complex disease, and this metabolic pathway does not fully explain obesity, but it is a likely contributor," says Deborah Muoio, PhD, of Duke's Sarah W. Stedman Nutrition and Metabolism Center, senior author of the study published in the October 12, 2005 issue of *Cell Metabolism*.

Excess fat storage in muscle tissue is a hallmark of obesity, and may contribute to problems such as diabetes and cardiovascular disease. The researchers discovered that skeletal muscle tissue and cells from obese people were programmed to store fat even when removed from the body and forced to grow in the laboratory. This finding suggests the gene is more active in obese people not only because of excess calorie intake, but also as a result of heritable changes in its regulation, Muoio says.

Obese patients receive less preventive care

Obese people are less likely to receive preventive services such as mammograms, Pap smears, and flu shots from health care providers, despite that fact that obese women have a higher risk of breast and cervical cancer, and the obese elderly have a higher risk of complications from flu.

According to the Duke study published in the September *American Journal of Public Health*, for a sample of white middle-aged women, as body mass index (BMI) went up, the odds of receiving mammograms and Pap smears went down. In data gathered in 2000, a white woman of normal weight was more than 50 percent more likely to receive a mammogram than a severely obese white woman. The researchers found a similar inverse correlation between obesity and flu shots among elderly white women and men. However, they found no significant association between obesity and all three preventive services among black study participants.

Is seafood safe for fetuses?

THE NATURALLY occurring marine toxin domoic acid can cause subtle but lasting cognitive damage in rats exposed to the chemical before birth, Duke researchers have found. The potentially lethal toxin can poison humans who eat contaminated shellfish.

The findings imply that the toxin might negatively affect unborn children at levels that do not cause symptoms in expectant mothers, says Levin. While the researchers note that eating seafood offers significant health benefits, they say their findings suggest that perhaps the government should lower the current threshold of toxin at which affected fisheries are closed. The Food and Drug Administration sets the current limit based on levels safe for adults.

The research suggests that perhaps the government should lower the current threshold of toxin at which affected fisheries are closed.

The researchers saw behavioral effects of the toxin in rats after prenatal exposure to domoic acid levels below those generally deemed safe for adults, says Edward Levin, PhD. Those effects—including an increased susceptibility to disruptions of memory—persisted into adulthood.

Leukemia, autoimmune disease treatment on the horizon

A NEW MONOCLONAL antibody that targets immune-system B cells has shown considerable promise for treating leukemias, autoimmune diseases, and transplant rejection, according to Duke immunologists.

B cells are the immune system's "arms factories," producing antibodies that target invading microbes for destruction. Abnormal B cell proliferation causes such leukemias as multiple myeloma and acute lymphoblastic leukemia, and such autoimmune diseases as rheumatoid arthritis and lupus.

In 10 mice transplanted with malignant B cell lymphomas, treatment with the CD19 monoclonal antibody (CD19 mAb) prevented the appearance of circulating and tissue tumor cells for up to seven weeks in all the animals. Untreated mice died from their tumors by three weeks.

"We were actually quite shocked at how effectively these treatments prevented malignant B cell expansion," says Thomas Tedder, PhD, who reported the findings October 10 in the online *Proceedings of the National Academy of Sciences*. "Treatment of such tumors in mouse models is extraordinarily difficult."

> The results of the animal studies warrant rapid advance to clinical trials for treatment of B cell leukemias and other malignancies.

Tedder noted that in general such immunotherapies are likely to produce far fewer side effects than current chemotherapies—which can produce secondary malignancies, sterility, and growth retardation in children who take them for leukemias.

According to Tedder, the results of the animal studies warrant rapid advance to clinical trials for treatment of B cell leukemias and other malignancies that derive from early B cell precursors and perhaps antibody-producing B cells. In particular, the researchers' finding that the treatment greatly depletes B cells in the peritoneum—a major source of autoantibody-producing cells in mice—could make it an effective treatment for autoimmune diseases such as lupus, says Tedder.

"This treatment could also aid transplant patients who require multiple organ transplants because they develop a humoral antibody response to their transplanted organs, or they already have preformed antibodies that prevent them from accepting some donor grafts." In contrast to the potentially benign nature of the CD19 mAb treatment, current therapy for such patients involves splenectomies and chemotherapeutic treatment and plasmapheresis to remove antibodies from the blood.

Tedder and his Duke colleagues are now developing plans for clinical trials at Duke of the CD19 mAbs in leukemias as well as autoimmune diseases. A company he founded, Cellective Therapeutics, Inc., will be further developing the therapy.

Same-sex mating of fungi may have spawned Vancouver Island disease outbreak

SAME-SEX MATING between two less harmful yeast strains might have spawned an outbreak of disease among otherwise healthy people and animals on Vancouver Island, British Columbia, Howard Hughes Medical Institute geneticists at Duke have reported.

After extensive genetic analysis of fungal samples, the researchers suggest that mating between two less harmful fungal strains of the same sex or "mating type" produced the more virulent form, *Cryptococcus gattii*, which is normally restricted to the tropics and subtropics. That strain has now taken hold in Vancouver and appears to be spreading, they say.

Since it was first documented in 1999, *C. gattii* has infected at least 100 people on Vancouver Island and the Canadian mainland and led to four deaths.

"While the number of people infected so far does not approach that of many other infectious diseases, this fungus is invading the central nervous systems of people who have no other apparent risk factors except having taken a walk in the park on Vancouver Island," says Joseph Heitman, MD, PhD, who reported the findings October 9, 2005, in an advance online *Nature*.

The researchers say their findings provide important additional insight into the origin of the outbreak. Moreover, the evidence that sex played an important role in the pathogen's expansion may provide a useful model for the evolution of infectious diseases and parasites more generally, they say.

"Sex within the same mating-type may confer an evolutionary advantage when the opposite mating type is unavailable," Heitman says.

Wonder woman's drug

Aspirin may have extra benefits for women

DUKE CARDIOLOGISTS recently showed that aspirin can significantly reduce death rates for postmenopausal women with heart disease—and that women who take aspirin also have a lower risk of stroke.

The two studies provide fresh evidence of the preventive benefits of the inexpensive, readily available drug, which tends to be under-prescribed for women, according to cardiology fellow Jeffrey Berger, MD, who presented the results of his analyses November 14, 2005, at the annual scientific sessions of the American Heart Association.

While the beneficial effect of aspirin for men is well-documented, the case is different for women. "All the major clinical trials studying the potential of aspirin either excluded women altogether or were predominantly men," Berger explains.

In his study examining aspirin's effects on stroke risk in women, Berger combined the data from six different randomized clinical trials, which yielded a total of 95,456 patients, none of whom had coronary artery disease. Of that total, 51,342 were women. The trials all involved the comparison of low-dose aspirin versus placebo for the primary prevention of cardiovascular disease.

"Among the women involved in these trials, the use of aspirin was associated with a statistically significant 17 percent reduction in the risk of stroke," Berger says. "For the men, aspirin use was associated with a non-significant 13 percent increase in stroke risk."

Berger also looked at the results for two markedly different types of stroke—ischemic, caused by blocked arteries, which represents about 83 percent of all strokes, and hemorrhagic, caused when blood vessels in the brain burst. Aspirin use was associated with a significant 24 percent reduction in ischemic stroke risk in women, compared to no effect for men. For hemorrhagic stroke, the trends were reversed: aspirin had no significant effect on women, but in men, aspirin was associated with a significant 69 percent increase in risk.

The findings should provide a scientific basis for physicians to prescribe aspirin as a preventative measure for those women who do not suffer gastrointestinal side effects, he adds, emphasizing that both healthy men and women who can tolerate aspirin should be taking the medication, as aspirin is already known to reduce heart attacks in men.

In the second study, researchers found that aspirin can significantly reduce death rates for postmenopausal women with heart disease. However, the Duke analysis of 8,928 women ages 50 to 79 with cardiovascular disease also found that fewer than half were taking any aspirin at all.

"[It's] very discouraging," says Berger. "The only reason for these women not to be taking aspirin is if they have an allergy or suffer severe side effects."

Compared to the women in Berger's analysis who did not take aspirin, those who did showed a 17 percent reduction in all-cause mortality. The women taking aspirin also demonstrated a 25 percent reduction in deaths associated with cardiovascular disease.

In terms of aspirin dosage, 30 percent of women took 81 mg daily, while 70 percent took 325 mg daily.

"When we looked at outcomes such as all-cause mortality or any other cardiovascular event, we found no significant difference between the two doses," Berger said. "For that reason, we not only encourage all postmenopausal women to talk with their doctors about taking aspirin, but if the doctor recommends aspirin, it should be taken at the lowest possible effective dose."

> "The fact that more women are not taking aspirin is very discouraging. The only reason for postmenopausal women with cardiovascular disease not to be taking aspirin is if they have an allergy or suffer severe side effects."
>
> —Jeffrey Berger, MD

Good nutrition counts—from the very beginning

AN IMMATURE EGG'S internal nutrient supply is critical to its survival—an insight that offers a new route to understanding and treating infertility due to egg death, according to Duke researchers.

As women age, their stockpile of immature eggs, called oocytes, diminishes through cell death, eventually leading to infertility. In studies with frog oocytes, the Duke researchers found that the nutrient storehouse, or yolk, plays a key role in regulating the survival of these cells. Depleting the nutrients triggers apoptosis—programmed cell death—and adding nutrients prolongs the life of eggs, they found. The study offers potential for developing oocyte-protective therapies for women undergoing chemotherapy, as well as potential targets for improved infertility treatments, say study senior author Sally Kornbluth, PhD, and lead author Leta Nutt, PhD. The results appear in the October 7, 2005 *Cell*.

Considering a controversial diagnostic tool

HOSPITALIZED PATIENTS WHOSE therapy was guided by pulmonary artery catheterization (PAC) experienced the same survival and re-hospitalization outcomes as patients whose therapy was evaluated with expert physical assessment, according to a new analysis by researchers from the Duke Clinical Research Institute (DCRI) and Brigham and Women's Hospital, Boston.

Pulmonary artery catheterization use should be limited to experienced centers and used only on patients with severe symptoms that persist despite previous therapies, new research suggests.

The value of PAC, an invasive diagnostic procedure used to guide treatment for patients with critical illness, has remained one of the most controversial topics in critical care medicine, following publication of a major observational study in 1996 by researchers at Case Western Reserve University that suggested the procedure may increase risk of death in severely ill patients.

While some physicians have urged the procedure be banned altogether, the Duke-Brigham researchers believe that their findings should put an end to many aspects of an ongoing debate over its use specifically for heart failure patients.

The researchers say that a lack of benefit from the procedure suggests that PAC use should be limited to experienced centers and used only on patients with severe symptoms that persist despite previous therapies.

The findings of the trial, dubbed ESCAPE (Evaluation Study of Congestive Heart Failure and Pulmonary Artery Catheterization Effectiveness), are published in the October 5, 2005, *Journal of the American Medical Association*. Published in the same edition is a DCRI-led meta-analysis of 13 randomized clinical trials involving PAC which found that the device does not appear to improve outcomes nor confer added risks to patients. The researchers concluded from that study that PACs should not be used routinely in patients in intensive care units, patients with severe heart failure, or patients undergoing surgery until further studies can uncover any correlations between outcomes from the use of the device with specific treatments.

"What may startle many people is that we have absolutely no therapies that have been proven by modern standards of evidence to benefit patients with acute heart failure, which is the fastest growing reason for hospitalization in the United States," says Robert Califf, MD, director of the DCRI and study member. "PAC is diagnosing problems with heart function, but other than 'old fashioned' fluid medicines, we do not have treatments to use that improve the ultimate outcomes for these desperately ill patients."

Prayerful study

"Examining the role of the human spirit in health care does not diminish its mystery, but it separates the mystery from the question of utility in health care practice."
—Mitchell Krucoff, MD

DISTANT PRAYER AND the bedside use of music, imagery, and touch (MIT therapy) did not have a significant effect upon the primary clinical outcome observed in patients undergoing certain heart procedures, researchers at Duke Clinical Research Institute (DCRI), Duke University Medical Center, the Durham Veterans Affairs Medical Center (VAMC), and seven other leading academic medical institutions across the U.S. have found. Therapeutic effects were noted, however, among secondary measures such as patients' emotional distress, re-hospitalization, and death rates.

The study marks the first time rigorous scientific protocols have been applied on a large scale to some of the world's most ancient healing traditions, the authors say, and the trends they observed may yield important clues to understanding the role of the human spirit in modern, technology-laden cardiovascular health care.

The report from Duke, published in the July 16, 2005, *Lancet*, is based upon data from the Monitoring and Actualization of Noetic TRAinings (MANTRA) II study. A total of 748 patients with coronary artery disease who were to undergo percutaneous coronary intervention or elective cardiac catheterization with possible percutaneous coronary intervention were enrolled at one of nine study sites between May 1999 and December 2002. Patients were randomized equally to four treatment groups. One group received both off-site intercessory prayer and MIT therapy; a second group received off-site intercessory prayer only; a third group received MIT therapy only, while the fourth group received only standard therapy.

The prayer portion of the randomization was double-blinded, meaning that patients and their care team did not know which patients were receiving intercessory prayer. Per policies governing clinical research, all patients were aware that they might be prayed for by people they did not know, from a variety of faiths. The MIT portion of the study was not blinded, so patients and their care team knew if they were randomized to those groups.

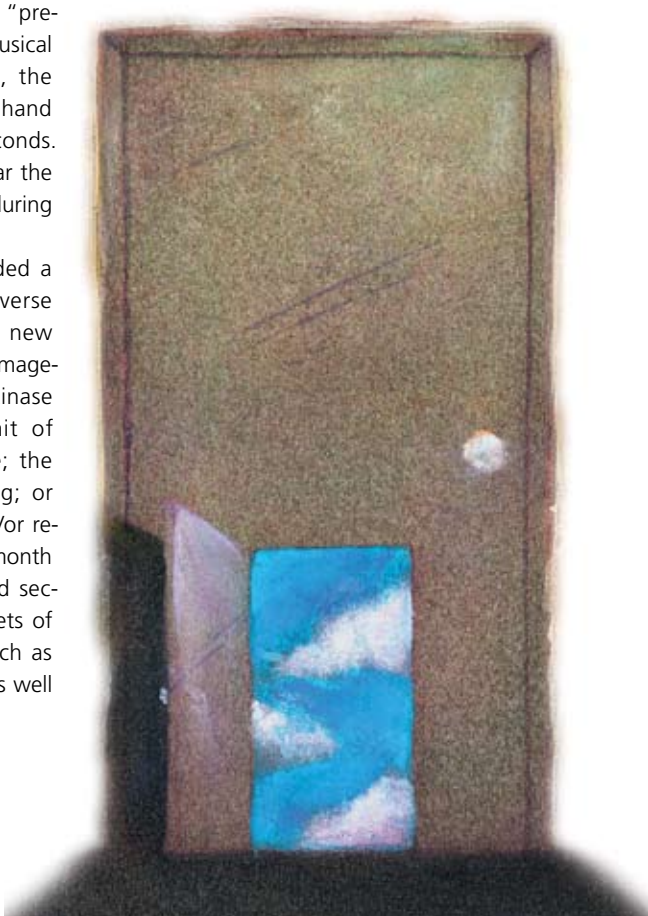
The prayer groups for the study were located throughout the world and included Buddhist, Muslim, Jewish, and multiple Christianity-based groups. The researchers noted that 89 percent of the patients in this study also knew of someone praying for them outside of the study protocol altogether.

MIT therapy was performed by a certified practitioner for 40 minutes at the patient's bedside after enrollment, but before the coronary procedure. The patient was taught relaxed abdominal breathing, chose a "preferred place" image, and selected a musical preference. After the imagery script, the practitioner applied 21 healing-touch hand positions, each for a period of 45 seconds. The patient then had the option to wear the headphones with musical background during the coronary procedure.

The primary clinical outcome included a combination of in-hospital major adverse cardiovascular events such as death; new signs of heart attack or a rise in the damage-indicating enzyme creatine phosphokinase to more than twice the upper limit of normal; new congestive heart failure; the need for additional coronary stenting; or the need for heart bypass surgery, and/or re-hospitalization or death within the six-month post-discharge follow up. Pre-specified secondary study endpoints included subsets of the primary endpoint combination, such as six-month death or re-hospitalization, as well as measures of emotional distress prior to a patient's procedure.

The researchers found no significant differences among the treatment groups in the primary composite endpoint. However, six-month mortality was lower in patients assigned bedside MIT, with the lowest absolute death rates observed in patients treated with both prayer and bedside MIT. Patients treated with bedside MIT also showed changes in self-rated emotional distress prior to catheterization and stenting.

"The most statistically significant finding of our analyses so far is the relief of pre-procedural distress with the use of music, imagery, and touch administered by a trained practitioner at the patient's bedside," says cardiology nurse practitioner Suzanne Crater, co-director of the project. "Whether this relief translates into better outcomes will require further analysis but the implications for every bedside practitioner are of great interest."




Elliott

Infertility always has been one of the most emotional areas of medicine—and with 6 million couples nationwide looking for help in starting families, Duke also is making sure it's one of the most pioneering.

EGG HUNTERS

BY BETH McNICHOL

Even now, Debbie Greer can't help but visit the infertility message boards online. Nowhere is there quite so much hope and love mingled with such heartache and desperation. It flows out from the multitude of acronyms and abbreviations: IVF, ICSI, BFP. It blinks passionately from emoticons that flash smiling icons and sobbing symbols. There are women here who suffer from polycystic ovary syndrome, women whose husbands have severe male factor infertility, women who speak of egg retrieval and follicles and embryo transfers with the familiarity of a scientist. Women who have tried every assisted reproductive technology available, over and over again, for as many as 11 years.

Only a few months ago, Greer was one of those women, and like a member of some secret society, she continues to read the message boards to remind herself how fragile the journey from infertility to parenthood is. Because in July, she became one of the lucky ones. After undergoing in vitro fertilization at the Duke Reproductive Endocrinology and Fertility division, she received what she had wanted for more than four years: a BFP—Big Fat Positive pregnancy test.

Those BFPs are better than gold to couples who struggle with infertility—and to the physicians at Duke who provide countless boxes of Kleenex each month as they shepherd their patients through the process. But Greer is doubly lucky: thanks to the pluck and prowess of the clinic's researchers, she got pregnant after only her first cycle of IVF, and she and her husband won't need a six-passenger minivan just to come home from the hospital next spring.

The Greers are having one baby. One, and only one. And that's just the result Duke wants.


David Walmer, MD, PhD

"THERE ARE NO GUARANTEES in fertility science—but there are enough successes to offer women hope."

—David Walmer, MD, PhD

"There are consequences to improving fertility," says David Walmer, MD, PhD, chief of the division. "Like improving it too much. And so our goal is to improve fertility while minimizing high-order multiple gestation. It's one of the most important things we can work on as physicians in this field today."

To that end, Walmer and his colleagues have made the investigation of embryo quality a specialty, coaxing hints from the little bundles of cells while they are still in the lab after fertilization. As a result, pregnancy rates at the clinic have gone from 10 percent with four or five embryos transferred a decade ago to 40 percent with just two or three embryos today.

The secret, says the clinic's IVF program director, Grace Couchman, MD, is in the rate of cell division. In the mid-1990s, several labs around the world were trying to improve pregnancy rates by growing embryos in vitro in media that mimicked the uterine environment instead of the usual fallopian tube solution. It was an important idea: embryos that could be grown in the lab for five or six days instead of the usual three—the point at which they make the journey from the tubes to the uterus in the body—could give physicians more information to better predict their ability to become blastocysts and, eventually, full-term babies, once implanted in the mother.

But Walmer found that many of those embryos never made it to blastocysts. The result was an unacceptably high miscarriage rate among the pregnancies that took after implantation.

Couchman believed a method existed to unlock an embryo's secrets during the commonly used three-day window. She took careful observations of the early embryos as their cells divided, looking at not only the speed and quantity, but their symmetry and fragmentation.

Bingo.

An embryo that had divided out to eight cells by day three in vitro had a far better chance of resulting in pregnancy than one that had only four cells, Couchman found. Even better were eight-cell embryos without fragmentation, or little bits of cytoplasm on the edges.

"That doesn't mean you can't get pregnant with a four- or five- or six-cell embryo," says Couchman. "But the statistical likelihood is lower. We link embryo quality to pregnancy outcomes. It means that if we have ideal, eight-cell embryos … we can put back fewer numbers of embryos and lessen the chance of them having triplets and quads."

The advancements in fertility technology can't come quickly enough for couples who seek help, whose numbers are increasing each year. After the use of fertility drugs to stimulate ovulation, IVF is one of the most popular methods to combat infertility, and Duke now does more than 250 cycles of the procedure annually. Just two years ago, the clinic performed 100 cycles.

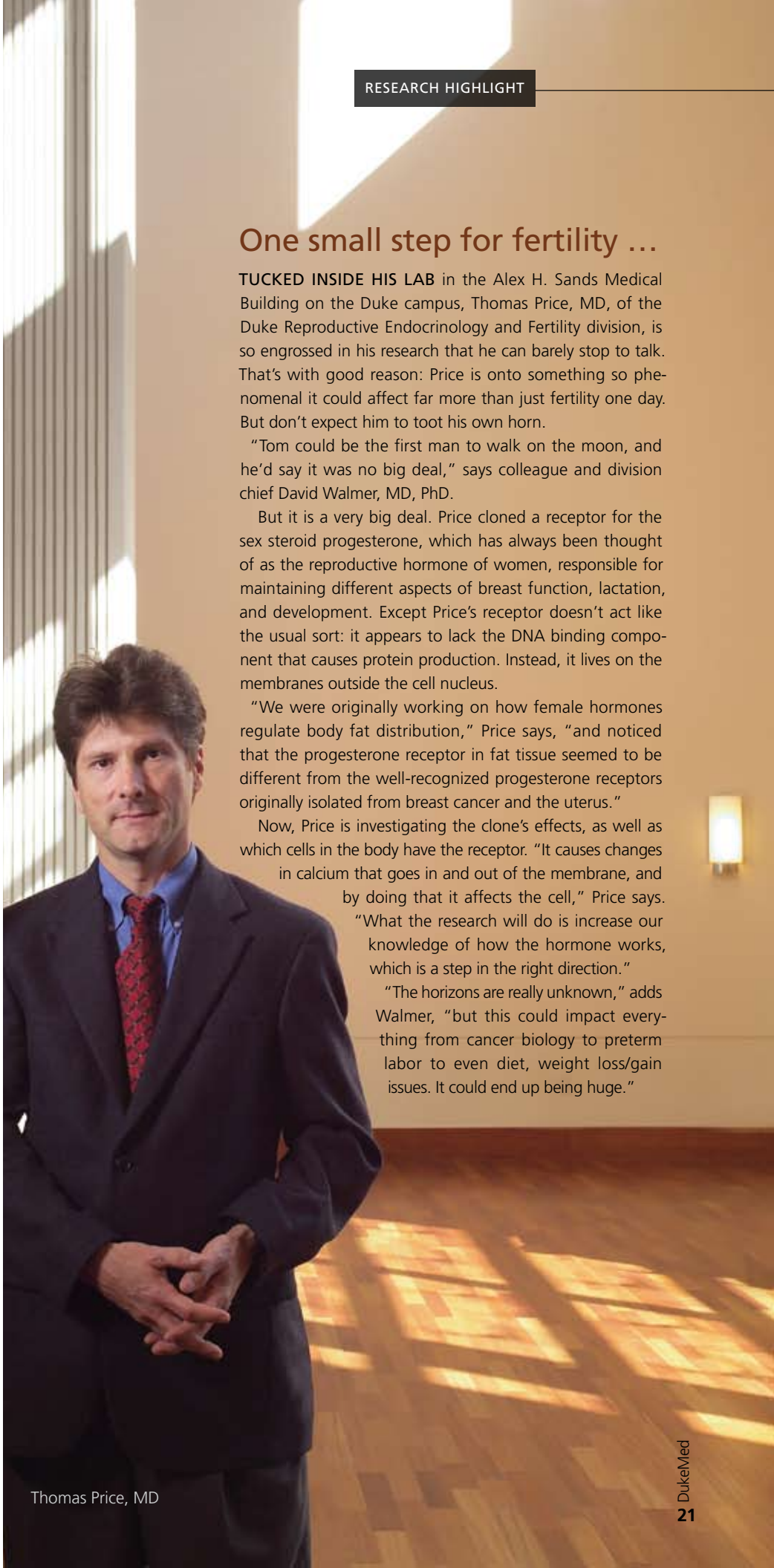
Next year, the Reproductive Endocrinology and Fertility main offices

will move into a new state-of-the-art building near the Streets at Southpoint mall in Durham, where even the air will be part of the therapy standard. The air quality will be measured in parts-per-billion to ensure that the IVF lab cultures and embryos are protected from toxic materials in the atmosphere, improving the possibility of success for its IVF patients. If standards aren't met during construction, Walmer says, they'll "rip it out and start over."

All of this is to service the 10 to 15 percent of couples nationwide who have trouble conceiving after a year of trying; in their late 30s and early 40s, as many as half struggle with fertility issues. Those numbers haven't changed much over the years. What has increased is the number of women waiting longer to start families. Advanced maternal age, along with anovulation, are the two biggest culprits in infertility troubles, Couchman says.

"I see a lot of educated women who have no idea they are waiting too long," she says. "Some are choosing to wait, some haven't yet met the right individual. But I also talk to women who say, 'If I had known that it would be this hard to get pregnant at 39, I really might have thought of doing something earlier.'"

The Duke researchers and clinicians strongly encourage women not to wait until their fertility declines in their late 30s to get pregnant, if they are sure they want children. The odds of procedures like IVF working decline with age as well, and while *People* magazine may have an actress over 40 who is newly pregnant in each issue, patients should remember that celebrities can afford the expense of medical interventions like IVF, which can



Thomas Price, MD

One small step for fertility …

TUCKED INSIDE HIS LAB in the Alex H. Sands Medical Building on the Duke campus, Thomas Price, MD, of the Duke Reproductive Endocrinology and Fertility division, is so engrossed in his research that he can barely stop to talk. That's with good reason: Price is onto something so phenomenal it could affect far more than just fertility one day. But don't expect him to toot his own horn.

"Tom could be the first man to walk on the moon, and he'd say it was no big deal," says colleague and division chief David Walmer, MD, PhD.

But it is a very big deal. Price cloned a receptor for the sex steroid progesterone, which has always been thought of as the reproductive hormone of women, responsible for maintaining different aspects of breast function, lactation, and development. Except Price's receptor doesn't act like the usual sort: it appears to lack the DNA binding component that causes protein production. Instead, it lives on the membranes outside the cell nucleus.

"We were originally working on how female hormones regulate body fat distribution," Price says, "and noticed that the progesterone receptor in fat tissue seemed to be different from the well-recognized progesterone receptors originally isolated from breast cancer and the uterus."

Now, Price is investigating the clone's effects, as well as which cells in the body have the receptor. "It causes changes in calcium that goes in and out of the membrane, and by doing that it affects the cell," Price says. "What the research will do is increase our knowledge of how the hormone works, which is a step in the right direction."

"The horizons are really unknown," adds Walmer, "but this could impact everything from cancer biology to preterm labor to even diet, weight loss/gain issues. It could end up being huge."

PROGRAM HIGHLIGHT

Mixing faith and science

RARELY DO YOU SEE a physician wear his religion on his sleeve. But David Walmer, MD, PhD, wears his quite literally around his neck, in the form of a green, gold, and maroon tie patterned with crosses, fish, and the word "faith." As chief of the Duke Reproductive Endocrinology and Fertility division, Walmer knows his attire is not only a revelation of his character, but an outward symbol of what anyone—Christian, Jewish, Muslim, or agnostic—must possess to face the emotional and physical roller coaster of infertility treatment.

You have to believe, deeply, to go through these procedures—if not in God, then in science. Walmer happens to believe in both. For many of his patients, that's a welcome fact. In fact, not only do more patients keep the dialogue on faith open with him through their medical journeys than not, many couples specifically come to Duke to see Walmer because of his Christian-focused practice. Many ask Walmer to pray with them before embryo transplants. Some just want the knowledge that they are cared for by a physician who unabashedly shares their faith. Others seek advice on reconciling the ethical issues that abound in assisted reproductive technology (ART) with their intense desire to begin a family.

"I used to feel uncomfortable sharing my Christian faith in an academic medical center setting," Walmer says. "When patients were paying for medical advice and time was limited, it didn't seem natural or appropriate launching into a discussion of faith if they might not be interested."

> "It is not my goal to persuade my patients to believe what I believe. But if they choose, I can certainly share what God has done in my life, walk with them through the fertility process from my perspective, and help them process the complexities of their options with regard to medicine and theology."
>
> —David Walmer, MD, PhD

But after five years as a basic scientist, 10 years as the director of IVF at Duke, and 13 years in ministry in the poorest nation in the Western hemisphere, Walmer has learned from the peasants of Haiti the importance of relationships and the importance that many people place in faith while pursuing parenthood.

"If patients perceive that faith is an important part of your life, they can choose to spend their time sharing it or not," he says. "It is not my goal to persuade my patients to believe what I believe. But if they choose, I can certainly share what God has done in my life, walk with them through the fertility process from my perspective, and help them process the complexities of their options with regard to medicine and theology."

Walmer, who founded a nonprofit called Family Health Ministries (www.familyhm.org), has also taught students in Duke's Medicine and Theology program about ART, discussing the role of human embryos in fertility treatments and research with hard questions about hypocrisy ("People who fight for potential human lives should also care deeply about the rights of children dying in developing countries," he says.)

Ultimately, he says, infertility is a journey of faith in which couples must decide what compromises are acceptable in their pursuit of parenthood—whether it's taking medications, going through in vitro fertilization, using donor eggs or sperm, or adopting. "At Duke we try to help couples make the right personal choices, and then work to give them the highest probability of success with the lowest chance of a complication," he says. "In the end, though, we just put sperm and eggs together and God makes the babies."

run as much as $10,000–15,000 per cycle.

But options may soon exist for women who are making the choice to stay childless longer, as well as for cancer patients who want to have families after potentially damaging chemotherapy. Duke is working on a new technique, currently practiced with only minimal success at a handful of other centers in the country, in which women can harvest their eggs and freeze them until they are ready to become pregnant. The therapy, which Couchman expects to have available in as soon as six months—but not before its results are perfected—gives women and couples more freedom to defy the ticking biological clock. Already, men who are undergoing chemotherapy or who have had vasectomies can freeze their sperm through ejaculation or biopsies, but the fragility of women's eggs has made them a more difficult science to conquer.

Couchman has been on the front lines of combating the often underestimated problem of male factor infertility as well. Forty percent of couples have trouble conceiving due to low sperm counts or other male infertility issues. Before the 1990s, even IVF wasn't useful in those situations. But Couchman has perfected an intracytoplasmic sperm injection (ICSI) program that she began at Duke in the late 1990s—now, by injecting a single sperm using a needle with a diameter of a human hair into an egg, couples can get pregnant using IVF.

"That has revolutionized male factor infertility," says Couchman. "It's completely changed the options for couples."

With so many novel treatments available, it's hard to believe anyone would have trouble conceiving with their own eggs and sperm. But in those instances, Duke's anonymous donor egg program, which has a success rate between 50 and 75 percent, has helped many couples achieve families. The first live birth from a donor egg in North Carolina happened through Duke on Valentine's Day in 1990—a set of twins who kicked off a long string of babies born from the generosity of donors.

"Young ladies who are willing to donate take the patients in our program who have the lowest chance of success and elevate them to the highest," Walmer says.

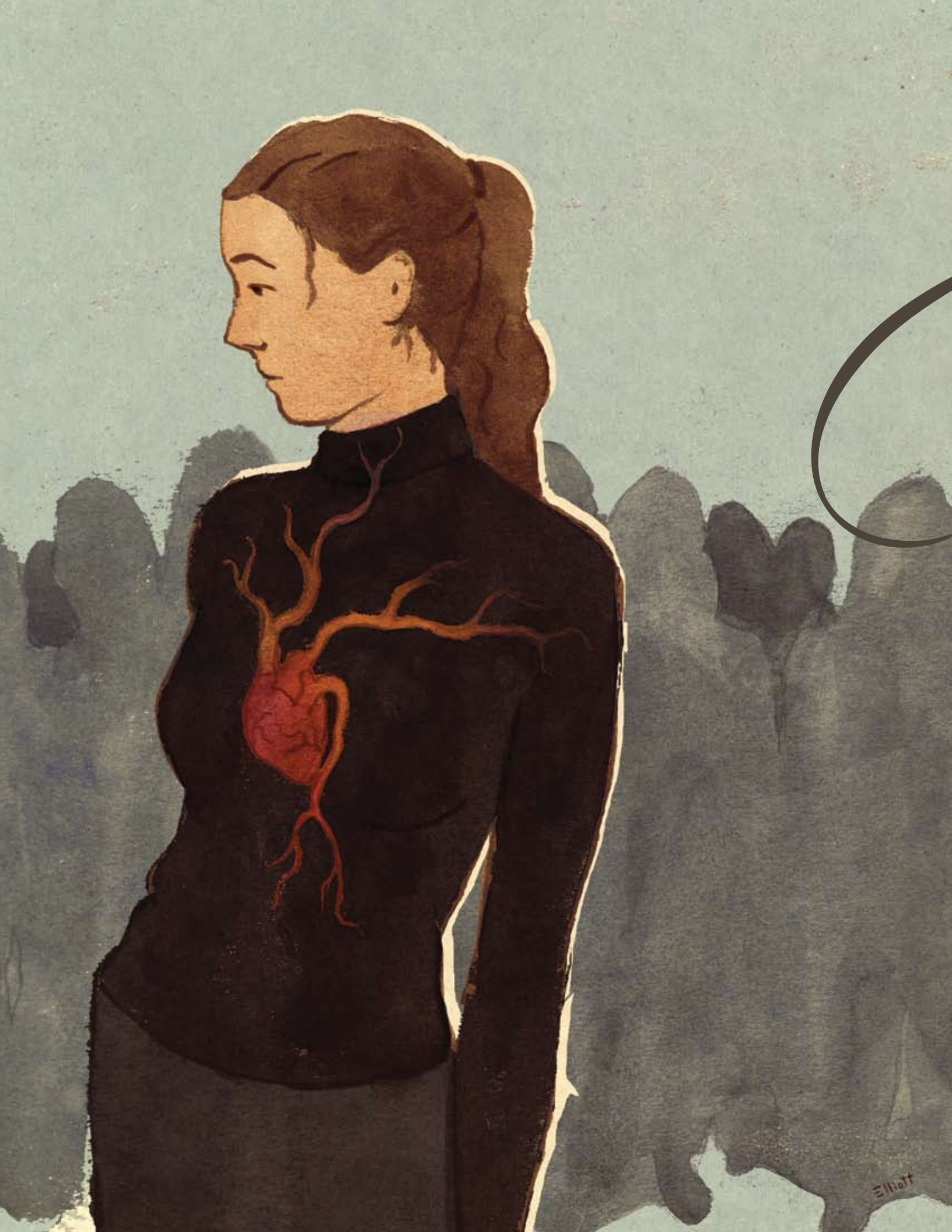
When assisted reproductive techniques are unsuccessful, some couples are more willing to consider adoption—an option that the physicians and staff, including a psychologist, counsel patients about at the outset of their relationship together. Because in fertility science, there is no such thing as a BFG—Big Fat Guarantee.

"PEOPLE COME HERE because they are seeking a child with their own gametes. But they come here mostly because they want to have a family, and we want them to reach their goal in whatever way possible." —Grace Couchman, MD

Even patients who shy away from IVF because of cost can squelch their fears by taking advantage of Duke's financing options. When a couple signs up for three treatment cycles through Duke's partnership with Advanced Reproductive Care, around 85 percent of their money is refunded if they don't go home with a child during one of them.

"People come here because they are seeking a child with their own gametes," Couchman says. "But they come here mostly because they want to have a family, and we want them to reach their goal in whatever way possible." □

For more information on fertility treatment at Duke, call ***919-684-HOPE (4673)*** *or visit* ***dukehealth.org****.*


Elliott

Women TAKE HEART

BY CATHY MACEK

Yogurt lids. A pink-handled chef's knife. Chocolate truffles embossed with a looped-ribbon logo. As most women know, there is no shortage of goods one can buy to support breast cancer research, and probably just about everyone knows the meaning of the familiar pink-ribbon icon.

But a red dress? That's something new.

Introduced just last year, the National Heart, Lung, and Blood Institute's Heart Truth campaign and its Red Dress logo is designed to raise awareness that cardiovascular disease is the leading killer of women. This is no longer a news flash to clinicians—but despite public service campaigns aimed at alerting women about the risk factors for heart disease, most women still believe that breast cancer is the biggest threat to their health (although an important health concern, it actually ranks fifth). What's more, gender disparities persist in cardiovascular disease treatment. For instance, women continue to receive less intensive treatments for acute myocardial infarctions, despite the fact that they are more likely than men to die within one year of a first recognized heart attack.

Now, a group of female cardiologists at Duke is making inroads into this knowledge gap among women and the treatment gap among physicians. Established in 2004, the Duke Center for Women's Heart Care is dedicated to raising awareness about women and heart disease and delivering multidisciplinary care designed specifically to meet women's heart health needs.

"As a fellow cardiologist who has practiced at some of the leading medical centers from coast to coast, I consider these physicians at Duke a dream team for women with heart disease."

—Victor J. Dzau, MD, chancellor for health affairs

"Once the confusion concerning hormone replacement therapy and heart disease was resolved, the differences between men and women became more obvious as far as their risk factors, their awareness of the risk factors, their willingness to accept the risks, and to some extent the treatment of their heart disease," says Pamela Douglas, MD, chief of cardiovascular medicine at Duke and the current president of the American College of Cardiology. "We want to be sure we take those differences into account so we can offer our patients the very best treatment in a more woman-friendly setting."

PROFILING PREVENTION

The brainchild of cardiologist Mimi Biswas, MD, MPH, the women's heart center is currently a virtual one, with its all-female staff of specialists seeing patients primarily at two satellite clinics in Durham and one in Raleigh (headed by Radha Kachhy, MD). Even though they are not in one location, however, the cardiologists are consolidated in their efforts to educate women about heart disease and provide personalized information about their risk profiles and ways to reduce the development or progression of the disease, Biswas says.

Indeed, implementing preventive strategies could avert the majority of premature coronary heart disease worldwide. Biswas notes that the landmark 2004 INTERHEART study of patients in 52 countries identified nine factors that account for more than 90 percent of the risk of acute MI. The nine risk factors—smoking, lipids, hypertension, diabetes, obesity, diet, physical activity, alcohol, and psychosocial factors—are the same in almost every geographic region, consistent in men and women, easily assessed in clinical practice and, most importantly, modifiable.

But many women continue to be in denial about their personal risk of cardiovascular disease, perhaps because it appears about five to 10 years later in women compared to men. "Cardiovascular risk evaluation should begin in the 20s," Douglas says. "Lab work should include a lipid profile and a fasting blood glucose, and patients should be encouraged to exercise, follow a healthy diet, lose weight if necessary, quit smoking, and deal more effectively with stress.

"The significance of some risk factors varies between men and women," Douglas continues. "For men bad cholesterol [LDL] is the most important thing, whereas in women, particularly younger women, it's the level of good cholesterol [HDL] that's important. And diabetes carries more of a risk in women."

Metabolic syndrome, a collection of health risks that increase the chance of developing heart disease, stroke, and diabetes, may be the most important marker for early detection of coronary disease in women, Biswas says. In women, it is defined as having three or more of the following: a waistline ≥ 35 inches; a blood pressure ≥ 130/85 mm Hg; a triglyceride level > 150 mg/dl; a fasting blood glucose level > 100 mg/dl; and a HDL level < 50 mg/dl. "Many women who develop heart disease later in life may never have been given a diagnosis of hypertension or hypercholesterolemia, yet they clearly fit into the category of metabolic syndrome," Biswas says. "Catching it early and implementing preventive strategies with these women can make a huge difference."

THE TRIALS OF HRT

The middle-aged woman's "fountain of youth" ran dry almost overnight in mid-2002 when the Women's Health Initiative (WHI) placebo-controlled study of hormonal replacement therapy (HRT) was called to a halt. Previous observational studies had indicated HRT as beneficial to bone, blood vessels, and brain. The large WHI study was stopped early because the women in estrogen-plus-progestin treatment group experienced heart attacks, strokes, blood clots, and breast cancer at a higher rate that the placebo group (although the HRT group also experienced fewer hip and other fractures as well as fewer cases of colon cancer).

Pamela Douglas, MD, Radha Kachhy, MD, Kristin Newby, MD, and Mimi Biswas, MD (left to right) are part of the team at the Duke Center for Women's Heart Care, which also includes Karen Alexander, MD, Sana Al-Khatib, MD, Anna Lisa Crowley, MD, Ruth Ann Greenfield, MD, and Svati Shah, MD.

"This illustrates the importance of placebo-controlled clinical trials," says cardiologist Kristin Newby, MD, MHS. "Observational studies can be affected by a number of biases—did HRT appear to be beneficial because healthier women with healthier lifestyles chose to take it, or because women with adverse events stopped taking HRT and therefore weren't included in the studies?"

Newby was an investigator for the earlier HERS (The Heart and Estrogen/Progestin Replacement Study) clinical trial in women with documented heart disease, which found that estrogen plus progestin did not prevent further heart attacks or death from coronary heart disease and increased the frequency of deep venous thrombosis and pulmonary embolism. (Newby was also part of the HERS-II long-term follow-up study, which showed no benefit from HRT after an average of nearly seven years of follow-up.) She notes that HRT use among her patients has dropped dramatically since the FDA recommended in early 2003 that HRT should not be used for heart disease prevention and should be used at the lowest dose possible for the shortest duration to control menopausal symptoms. "One piece of the puzzle that some suggest is missing is whether HRT in other formulations or given topically with a patch would provide positive cardiovascular effects or prevent adverse effects—but it would be challenging to design controlled studies now, based on what we know," Newby says. "And we have other treatments that have proven beneficial for heart disease to offer our patients, like statins, beta-blockers, ACE inhibitors, and aspirin."

ELDER HEARTS

HRT also did not fare well in the WHIMS (Women's Health Initiative Memory Study) ancillary study, which examined its effects on the development and progression of dementia symptoms in women ages 65 and older. In fact, it increased the risk of developing dementia, including Alzheimer's disease, and did not prevent cognitive decline. Along with its impor-

> "Many women still aren't getting the message that heart disease is probably what is going to kill you, and you need to prevent or reduce your risk factors instead of treating them later."
>
> —Mimi Biswas, MD, MPH

tant findings, WHIMS is notable because of the older population it studied; women in general and the elderly in particular are underrepresented in clinical trials, notes cardiologist Karen Alexander, MD, who specializes in the care of geriatric patients (and since women generally live longer than men, most of her patients are female).

Alexander has researched the outcomes for elderly and female heart patients following revascularization procedures such as cardiac bypass surgery. She is first author on a recent study of nearly 57,000 patients ages 65 and over with acute coronary syndrome—a spectrum of conditions involving lack of oxygen to the myocardium, running the gamut from unstable angina to a full-blown myocardial infarction—which found that adherence to national treatment guidelines declines as the age of patients increases. The rapid use of anti-clotting drugs decreased with age, and elderly patients were also less likely to undergo diagnostic catheterization procedures, angioplasty, or coronary artery bypass surgery. "We also found that although death rates and complications rose with the age of the patient in the study, elderly patients who received more recommended therapies were less likely to die than those who did not," Alexander says. Although the researchers didn't separately analyze the data from men and women, the majority of patients ages 75 and older in the study were women.

Alexander hopes that these treatment trends are not an example of ageism. "A person's chronological age shouldn't automatically exclude them from treatments," she says. "Their cognitive status and ability to function independently are important considerations that provide a reflection of their 'biologic age.' Can they answer the phone, balance their checkbook? Do their family members report any impairment? Physicians should always keep in mind that the elderly are a heterogeneous group."

VIVE LA DIFFERENCE?

Despite numerous initiatives to remedy the disparities, treatment for heart disease continues to vary according to sex. From studies of data collected by CRUSADE, a cardiovascular disease quality-improvement initiative based at the Duke Clinical Research Institute, it's clear that women are less likely than men to receive evidence-based therapies, Newby says. "We need to better understand what is underlying that phenomenon so we can be sure women are receiving treatments that we know work today."

Perhaps one reason women are undertreated for their heart disease is that they often present with different symptoms than men. For instance, the chest pain or pressure of angina predicts heart disease in 80 percent or more of men, but it is only predictive in 50 to 60 percent of women. Fatigue, nausea, flu-like symptoms, shortness of breath, and pain in the neck, jaw, or shoulder are all warning signs that occur more frequently in women, but may not be recognized. Compared with men, women are more likely to be misdiagnosed and are more likely to die from their first heart attack than men are (38 percent vs. 25 percent). Of those who survive, 46 percent of women and 22 percent of men will become disabled with heart failure within six years, and 25 percent of women and 18 percent of men will have another heart attack within six years. And even though more women than men die of heart disease each year, women receive only 33 percent of angioplasties, stents, and bypass surgeries; 28 percent of implantable defibrillators; and 36 percent of open-heart surgeries.

THE LADY IN RED

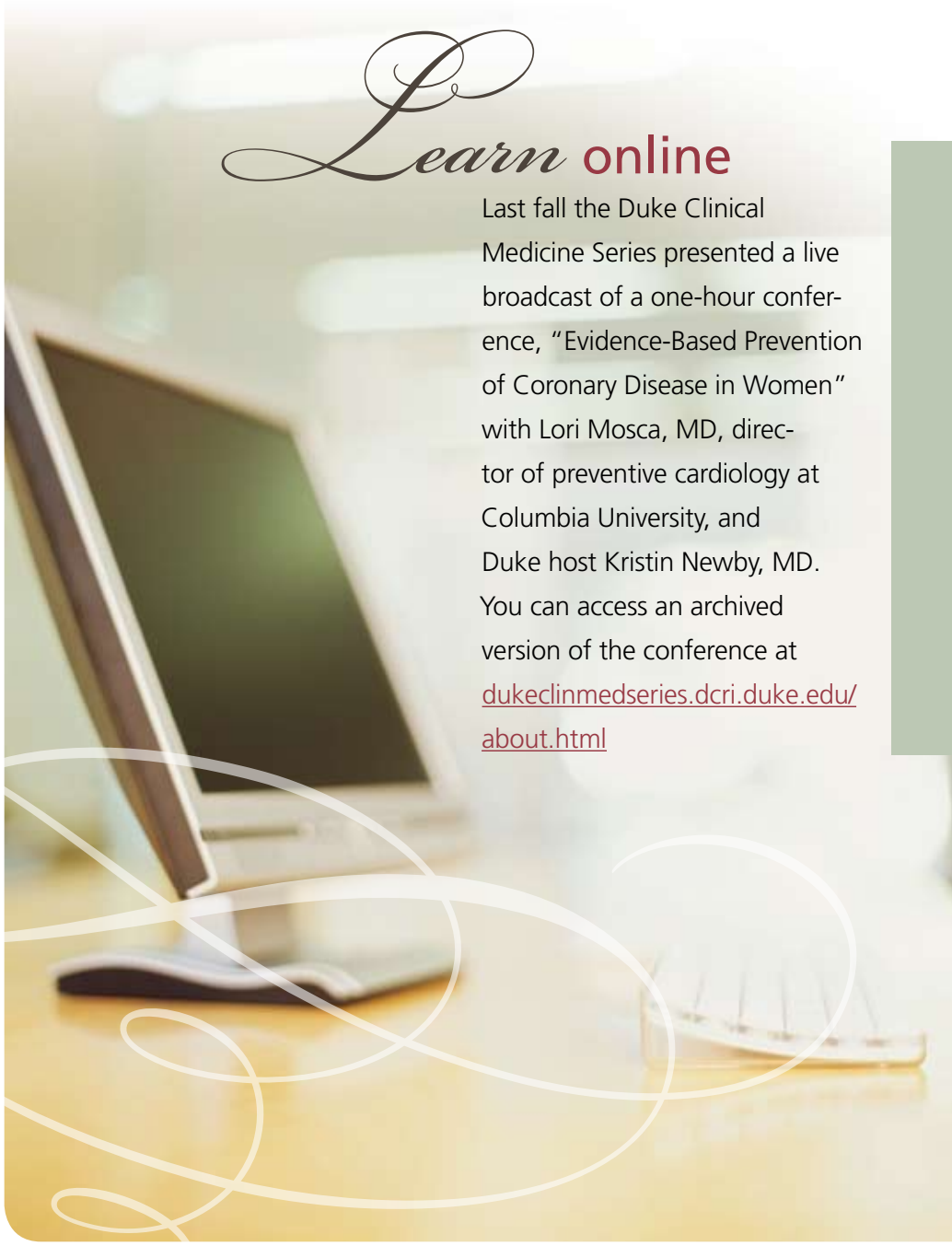
Clearly, women can benefit from education about heart disease and a more evidence-based approach to its treatment. That's why the Duke Center for Women's Heart Care is geared toward raising awareness about women and heart disease and delivering multidisciplinary care to meet each patient's unique heart health needs, says Biswas, the clinic director. "We provide each patient with an educational kit tailored to her risk factors and a women's wellness packet from the Duke Center for Living. They also receive a discount at Curves [a nationwide women's workout facility]." The Heart Center's director of community education, Leatrice Martin Short, is also developing

a Web-based walking club and smoking cessation classes, and the clinic offers periodic risk-factor screening sessions in the community using the Framingham Point Score Estimate of 10-Year Risk for Women (www.nhlbi.nih.gov/about/framingham/riskwom.pdf).

The kickoff of the Heart Truth national awareness campaign (with its icon, the Red Dress), coincided with the 2004 release of the American Heart Association's new evidence-based guidelines for cardiovascular disease prevention in women. "The Red Dress efforts are bringing women's heart health into the limelight," Biswas says. "But many women still aren't getting the message that heart disease is probably what is going to kill you, and you need to prevent or reduce your risk factors instead of treating them later. Through the Duke clinic, we hope to get that message across to as many women as we can."

"So far the response to the clinic has been fabulous," Douglas says. "We are providing something more for women. We are partnering with our patients, listening to them instead of telling them what to do. And that level of patient satisfaction is hard to come by." □

To refer a patient to a Duke Center for Women's Heart Care specialist, or to make an appointment, please call ***919-681-5816****.*



Learn online

Last fall the Duke Clinical Medicine Series presented a live broadcast of a one-hour conference, "Evidence-Based Prevention of Coronary Disease in Women" with Lori Mosca, MD, director of preventive cardiology at Columbia University, and Duke host Kristin Newby, MD. You can access an archived version of the conference at dukeclinmedseries.dcri.duke.edu/about.html

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Melanie Bacheler remembers the first hints that her mother, Gail Parkins, might be sick. Parkins suddenly lost weight. "At first we were excited," Bacheler says, because her mother had always struggled with extra pounds.

LISTENING TO THE DISEASE THAT *whispers*

BY ANGELA SPIVEY

but then came stomach pains and fatigue. Parkins visited her regular doctor, then an endocrinologist, and a gastroenterologist. "My mother went to one doctor a week for six weeks," Bacheler says.

None of them suspected ovarian cancer. Only when Parkins began having intense pain and went to an urgent care center was she diagnosed with the disease. With the help of doctors at Duke, Parkins fought the cancer hard with surgery and chemotherapy. She passed away in 2002, at age 56, two years after her diagnosis.

Unfortunately, Parkins's story echoes that of many other women with ovarian cancer. While not nearly as common as breast cancer, ovarian cancer is often fatal; it's the fourth leading cause of cancer deaths among women in the United States. Known as "the disease that whispers," it produces few symptoms in the early stages. And the symptoms that do eventually appear—abdominal distention or bloating, abdominal discomfort, gastrointestinal symptoms, unexplained weight loss, bladder pressure, and other urinary symptoms—are so non-specific that many women go through several misdiagnoses.

"Physicians don't think about ovarian cancer when women come in with these symptoms. And women themselves don't often think about it," says Andrew Berchuck, MD, F. Bayard Carter Professor in Duke's Division of Gynecologic Oncology. "Too often women are told they have irritable bowel syndrome or are put through a gauntlet of tests that target everything but ovarian cancer. Women and general practitioners both need to have ovarian cancer more in mind when those sorts of symptoms occur."

Fidel Valea, MD, associate professor of gynecologic oncology at the Duke Health Raleigh Cancer Center, says that physicians should consider the possibility of ovarian cancer when women who are perimenopausal or menopausal present


Elliott

Andrew Berchuck, MD

with any gastrointestinal-related symptom such as bloating, pain, or frequent bowel movements. "We have to be careful because there are only about 22,000 cases of ovarian cancer in the United States each year," Valea says. Not every woman with gastrointestinal symptoms will be a candidate for an ovarian cancer workup. But physicians need to remember that ovarian cancer won't necessarily present with traditional gynecological symptoms such as an obvious mass, copious discharge, or bleeding, he says.

NO GOOD SCREENING TEST

Ovarian cancer is doubly elusive; besides causing few symptoms, it doesn't reveal itself in screening tests. "We don't have the equivalent of a mammogram or a Pap smear for ovarian cancer screening," Valea says. The detection methods that do exist include vaginal ultrasound and testing for the blood marker CA-125. But neither is sensitive enough or specific enough for routine use in the general population. Most masses found with vaginal ultrasound are not related to ovarian cancer. And the CA-125 blood marker results in too many false positives. Studies have shown that 3 percent of women over age 50 have elevated levels of CA-125, Berchuck says, but very few of these women actually have ovarian cancer. A large prospective screening trial in the United Kingdom is presently evaluating whether rising CA-125 levels over time can improve the test's positive predictive value. Valea adds, "The best prospect for screening probably lies with focusing on a subset of the population that is at increased risk."

Doctors and scientists at Duke are conducting genetic and epidemiological research to pinpoint the exact characteristics of that high-risk group (see page 34). "What I think is very important for ovarian cancer is identifying the subgroup in the United States that is at really high risk," says Joellen Schildkraut, PhD, associate professor in Duke's Department of Family and Community Medicine. "We certainly won't give up on finding ways to detect ovarian cancer early. But we're also working to better understand the complex etiology of the disease, so we can develop interventions to prevent it."

WHO IS AT RISK?

Scientists are just beginning to focus the picture of the group at high risk for ovarian cancer. One of the most easily recognized risk factors is a strong family history of either breast or ovarian cancer. Strong family history is defined as more than one case, at any age, in either a first-degree relative (mother, sister, or

> *"With genetic testing, we can not only identify those in the family who have a high risk of ovarian cancer, but also can reassure those with negative tests that they do not."*
>
> —ANDREW BERCHUCK, MD

daughter) or second-degree relative (grandparent, aunt, or cousin). It's more likely that a family has a genetic predisposition if the ovarian cancer occurred at an earlier age (before 50). Berchuck stresses the importance of taking thorough family histories and encouraging women with such cancers in their family to talk to a genetic counselor about testing for a mutation in the BRCA1 or BRCA2 genes (the so-called breast/ovarian cancer genes). Women with a mutation in either one of these genes have a 10 to 40 percent risk of developing ovarian cancer.

A simple blood test can tell an individual woman whether or not she actually carries a BRCA1 or BRCA2 mutation. "In the 1970s and into the 1980s, when we saw one of those families where there was a lot of ovarian cancer or breast cancer, we considered all women in the family at risk," Berchuck says. "But we now know that even if a family carries a BRCA mutation, the chance of an individual inheriting the mutation is only 50 percent. So with genetic testing, we can not only identify those in the family who have a high risk of cancer, but also can reassure those with negative tests that they do not."

While many genetic counselors specialize in prenatal counseling, women with a family history of ovarian cancer should seek genetic counseling from a clinic targeted to adults concerned about cancer. The Hereditary Cancer Clinic at the Duke Comprehensive Cancer Center offers such risk assessment and education. "Duke was one of the first institutions to have a hereditary breast and ovarian cancer clinic," Berchuck says.

The other main risk factors for ovarian cancer relate to reproductive history. Pregnancy, breastfeeding, and oral contraceptive use—all of which inhibit ovulation—are all associated with a striking decrease in ovarian cancer risk. "Women who have three children or use the pill for more than five years have about a 50 percent decreased risk," Berchuck says. "Conversely, women who ovulate regularly throughout their reproductive lives and do not become pregnant or use the pill are at increased risk. It's thought that ovulation causes inflammation and DNA damage that represent the earliest precursors of ovarian cancer."

In addition to damage caused by ovulation, there is evidence that environmental substances such as hygienic talc can migrate up to the ovary through the genital tract and contribute to the development of cancer. Berchuck says this theory is supported by the observation that hysterectomy and tubal ligation, which interrupt this pathway, are strongly protective against ovarian cancer.

Joellen Schildkraut, PhD

The state of ovarian cancer research

SINCE 1999, SOME 1,600 women in North Carolina have been helping Duke researchers learn more about ovarian cancer. Through the North Carolina Ovarian Cancer Study, a population-based study encompassing 48 counties, researchers led by Joellen Schildkraut, PhD, and Andrew Berchuck, MD, hope to create a more detailed profile of the women most at risk. The participants include women recently diagnosed with ovarian cancer as well as women without cancer from the same geographic areas (to act as control subjects). Women with ovarian cancer are invited to participate through the N.C. Central Cancer Registry.

Using in-home interviews and blood tests, the researchers compare genetic makeup, lifestyle factors, and reproductive history of the women with cancer and those without. Early findings suggest both possible risk factors and interventions. One result suggests that larger waist-to-hip ratio (i.e. an "apple" shape) as well as a higher body mass index are related to increased risk for ovarian cancer. This jibes with the general finding from other studies that obesity increases cancer risk. Berchuck says, "Epidemiological evidence to date has not suggested that diet is a major risk factor for ovarian cancer. But it wouldn't surprise me at all if 30 years from now the Western diet of the year 2000 is viewed by scientists with the same sort of horror as cigarette smoking is now."

The researchers have also found decreased risk in women who report regular use of nonsteroidal anti-inflammatory drugs such as aspirin or acetaminophen—perhaps, Berchuck says, such drugs protect against the genetic damage that normally occurs in the ovary with ovulation. Some day doctors might recommend a simple intervention such as a baby aspirin a day to prevent ovarian cancer in certain women. "We still need to learn more, but it seems that these anti-inflammatory drugs render a protective effect against cancer, and this could be good news for people at high risk," Schildkraut says. They're exploring the finding by looking for genes involved in metabolism of aspirin and in inflammation in general.

The team has also published results showing that menopausal hormone replacement therapy formulations that include both progestin and estrogen did not increase the risk for ovarian cancer. Formulations that were estrogen-only did increase risk. "Fortunately, the estrogen-only formulations aren't being prescribed so much anymore," Schildkraut says. "But it tells us that at least the combination formulations don't seem to have a deleterious effect on risk, which is a good thing."

When a team that included Duke researchers discovered the BRCA1 and BRCA2 mutations 10 years ago, that was a breakthrough, Schildkraut says, and today that knowledge is helping pinpoint a few people at very high risk for breast and ovarian cancer. But 75 percent of ovarian cancers can't be attributed directly to heredity. Schildkraut thinks that further explanations will come from studying the interactions between genes and environment.

"I want to be able to identify people who cross a threshold in their risk for ovarian cancer," Schildkraut says. "Those are the people we want to offer interventions to. I think it's even more important for ovarian cancer, which is relatively rare, than in some other diseases. At this stage we certainly have identified risk factors for the disease, but the picture isn't complete yet. We still have a lot of work to do."

> *"The best prospect for screening probably lies with focusing on a subset of the population that is at increased risk."*
>
> —FIDEL VALEA, MD

SHIELDING THE VULNERABLE

Better understanding of the causes of ovarian cancer is suggesting new opportunities for prevention. For example, given the relationship between high numbers of ovulations and ovarian cancer, "active management of ovulation" using oral contraceptives might be reasonable, especially for women at high risk, Berchuck says. "The idea is that you should only be ovulating when you want to get pregnant. Obviously the pros and cons have to be weighed in each patient, because there certainly are increased risks of blood clots and possibly breast cancer with the pill."

The ultimate preventive tool is removal of the ovaries (oophorectomy), which decreases risk of ovarian cancer by 99 percent and also decreases breast cancer risk. For women with mutations in one of the BRCA genes, there is a consensus among experts that, after these women have completed their families, doctors should strongly recommend prophylactic oophorectomy. Berchuck and other national experts have developed position statements to that effect, and the recommendation is rapidly becoming the standard of care. Women who decide to have their ovaries removed do have time to bear children, since ovarian cancer incidence doesn't rise in BRCA carriers until their mid- to late 30s, Berchuck says. Berchuck himself has performed more than 50 prophylactic oopherectomies at Duke. For women with BRCA mutations who elect to keep their ovaries, annual CA-125 tests and vaginal ultrasounds might be reasonable, he says.

THE SPECTRUM OF TREATMENT

Both Valea and Berchuck stress the role of the gynecologic oncologist in treating and managing ovarian cancer. "Treating ovarian cancer encompasses the whole spectrum of medicine from fairly aggressive and radical surgery to administration of chemotherapy and managing a range of significant problems, including malnutrition," says Valea.


Susan Murphy, PhD

Stalking the causes of ovarian cancer

WHY DOES OVARIAN CANCER develop? To find answers, Susan Murphy, PhD, assistant professor of gynecologic oncology, is going straight to the source—examining tumor tissue for changes in DNA methylation that may have contributed to the tumor's development. She's also trying to find out whether such methylation changes are established during the earliest stages of development. "Could a mother's diet and environmental exposures affect her offspring's susceptibility to disease, especially cancer, by affecting methylation patterns?" she asks.

Murphy also works with a gynecologic oncology fellow in Andrew Berchuck's lab, Amy French, MD, to design studies to find out if DNA methylation changes specific to ovarian tumors leave telltale signs in the blood. "Ovarian cancer is so hidden," Murphy says. "We can't just have every woman come in and have a biopsy taken of the ovary. Ultimately, we want to find a relatively non-invasive way to screen women, such as blood sampling."

Berchuck adds, "We want to increase awareness among both physicians and women of the special expertise and training of gynecologist oncologists in the diagnosis and management of ovarian cancer. Some women with ovarian cancer are operated on by general OB-GYNs or surgeons who are not prepared to optimally resect advanced stage disease or to determine the true extent of apparent early-stage disease. With advanced disease, studies have shown that survival is longer if most of the cancer is removed. If a woman is found to have ovarian cancer that looks like it's confined to the ovaries, actually about 30 percent have occult metastatic disease that you're not going to find unless you do staging biopsies, including peritoneal biopsies and abdominal lymph node sampling."

Duke researchers are exploring experimental treatments that could be used in combination with existing therapies. Gynecologic oncologist Angeles Alvarez Secord, MD, is developing clinical trials of several such biological therapies. One agent that inhibits the development of new blood vessels in tumors (Avastin) already has shown some efficacy in ovarian cancer. In addition, monoclonal antibodies have been developed that can travel through the bloodstream to directly target tumor cells. The antibody may neutralize growth-stimulating pathways in the cancer cell or may preferentially deliver tumor-killing substances that spare adjacent normal cells, according to Secord. Most biological therapies aren't available to patients outside of clinical trials, but Secord predicts they will become part of first-line treatment, used in combination with chemotherapy after initial surgery. Secord is leading an active trial to find out whether combining a monoclonal antibody called

RESOURCES

The Hereditary Cancer Clinic at Duke Comprehensive Cancer Center offers cancer risk assessment, counseling, and education for cancer patients and people with a family history of cancer or other cancer risk factors. For more information or to make an appointment, visit cancer.duke.edu/hcc or contact Robin King at **919-684-3181**, **king0124@mc.duke.edu**.

The clinic also offers genetic counseling at North Carolina community hospitals in Roxboro, Henderson, Oxford, Smithfield, Lumberton, Laurinburg, and Whiteville. For more information, visit cancer.duke.edu/hcc/appt.asp or contact Adam Buchanan, **919-668-0766**, **adam.buchanan@duke.edu**).

cetuximab with the chemotherapy drug carboplatin can kill more tumor cells.

"As we begin to learn more about this disease at the molecular level, we hope to develop molecularly targeted therapies to improve outcomes," Secord says. "In addition to curing more patients, we want to improve the quality of life and survival duration of all those we treat."

As doctors and scientists work to improve screening, prevention, and treatment, Melanie Bacheler does what she can to increase awareness. During her mother's two-year battle with ovarian cancer, Parkins and Bacheler heard about a friend who participated in a walk to raise money for breast cancer research. "My mother joked, 'There are no ovarian cancer walks,'" Bacheler says. After her mother died, Bacheler decided to change that. In 2003, she launched the Gail Parkins Memorial Ovarian Awareness Walk, held in Raleigh, North Carolina. "That first year, these women who were survivors came, and they were so proud to get up on stage and say their names," she says.

Now an annual event in its third year, the walk attracted over 700 people and raised more than $200,000 in 2005 to support research in the gynecologic oncology program of the Duke Comprehensive Cancer Center. □


Angeles Alvarez Secord, MD

"As we begin to learn more about this disease at the molecular level, we hope to develop new therapies to improve outcomes. In addition to curing more patients, we want to improve the quality of life and survival duration of all those we treat."

—ANGELES ALVAREZ SECORD, MD

Most of the Duke clinical trials of biological therapies for ovarian cancer are in approval stages but will be active soon. To refer patients interested in participating, see the information and list of active trials at cancer.duke.edu or call the Duke Consultation and Referral Center at **1-888-ASK-DUKE (275-3853)**.

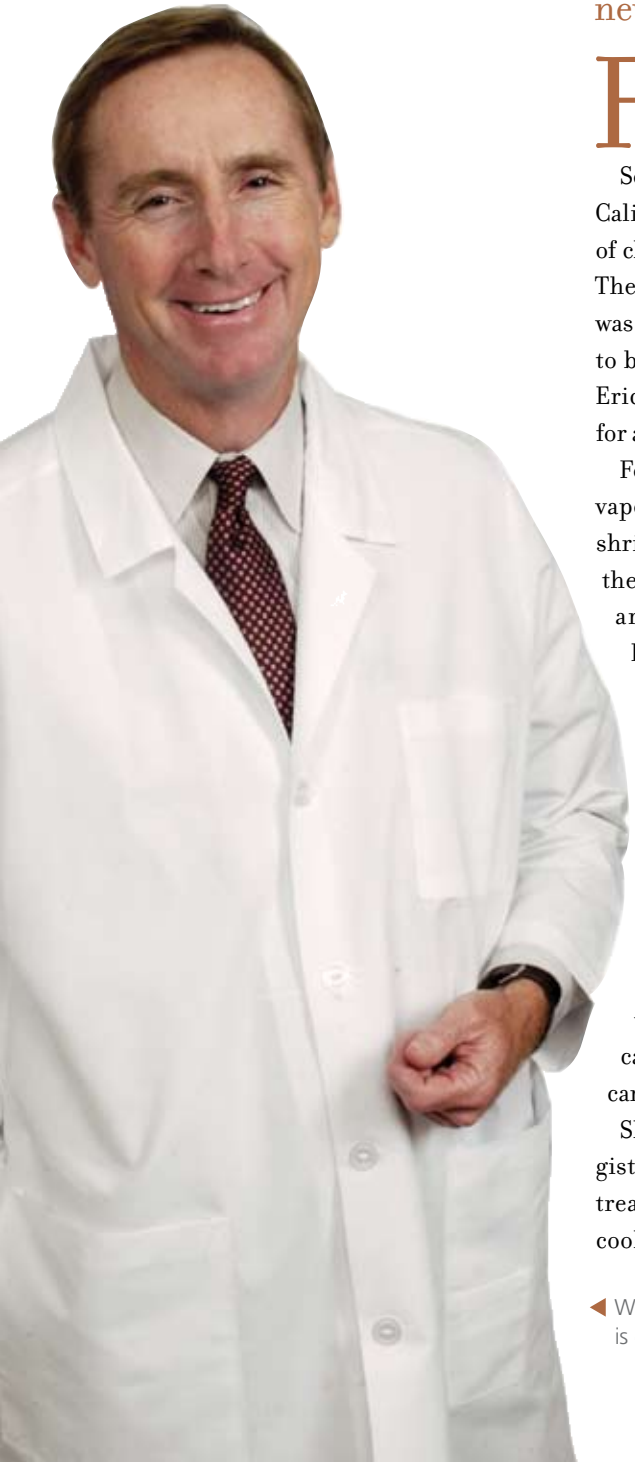
The Duke Gynecologic Oncology Division serves patients in Durham, Greensboro, and at two locations in Raleigh. To refer a patient or get more information, call the Duke Consultation and Referral Center at **1-888-ASK-DUKE (275-3853)**.

For more information about the Gail Parkins Memorial Ovarian Awareness Walk, visit www.ovarianawareness.org.

ALLERGIC REACTION

BY DENNIS MEREDITH

The skyrocketing incidence of food allergies demands both new treatments and old-fashioned attention to patients.



For Eric Nguyen, it only took a bite of candy to trigger a medical emergency.

Some 15 years ago, while on vacation in California, the toddler was given a piece of chocolate with nuts, recalls his mother, Theresa. "Within maybe 15 minutes, he was itching like crazy, with hives from top to bottom," she says. Gasping for breath, Eric was rushed to the emergency room for a lifesaving shot of epinephrine.

For Eric's little brother, mere cooking vapors did it. "My husband was cooking shrimp, and I was folding the laundry at the time, and Conrad was just running around, laughing and giggling and having a good time, and I said to my husband, 'His voice is getting higher pitched,'" says Theresa. "The next thing I knew he was flat on the floor, passed out."

As it turned out, all three of Theresa Nguyen's children—Eric, now 17, Tessa, 15, and Conrad, 13—have allergies to such foods as peanuts, eggs, milk, and shellfish. And the recognition that those allergies can be life-threatening has made her a careful, proactive parent.

She has worked closely with their allergists, thoroughly researched causes and treatments for food allergies, learned to cook allergen-free foods, joined support groups, and educated teachers and nurses in her children's schools about the need to adjust to children with such allergies.

Her kids have had to adjust, too. Conrad cannot even be in the same room with peanuts, so he takes his school lunch outside with a friend. Eric always carries his medicine and his EpiPen. And they all look out for each other—Tessa, for example, is learning to cook treats that her brothers can eat.

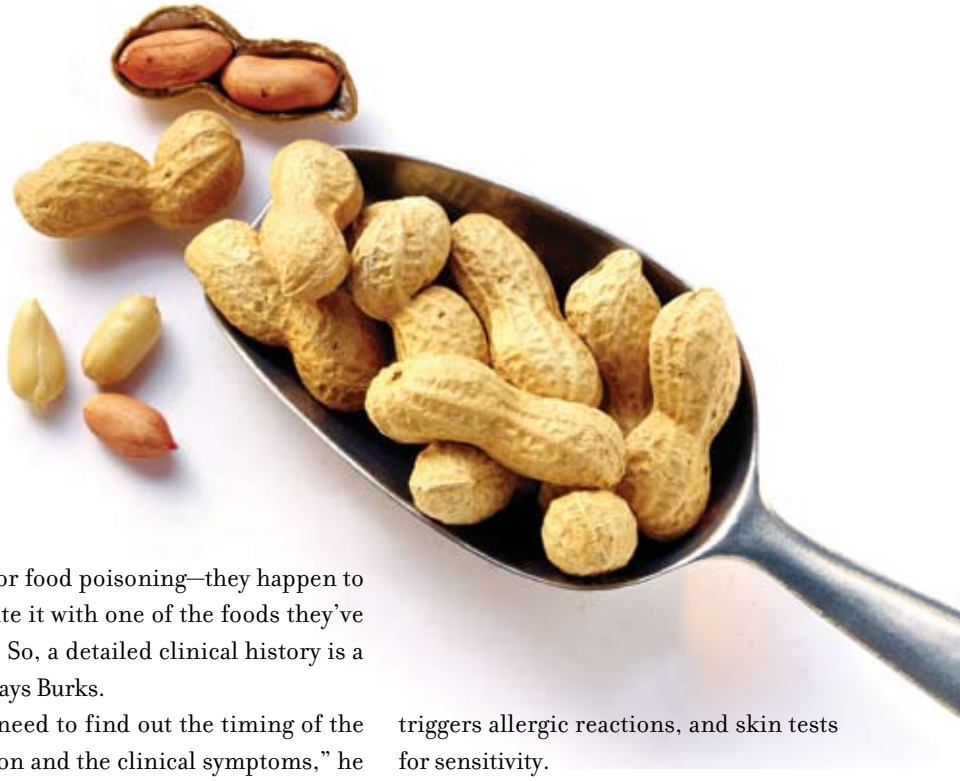
Still, there are problems, sometimes from surprising directions. When the family first moved to North Carolina in 2002, the first physician Theresa saw shocked her with his dismissive attitude.

"He didn't want to believe that Conrad had food allergies, or that they were severe," she recalls. "I had all Conrad's records, and it was like the doctor didn't want to accept the paperwork that I had, or that anybody could have a peanut allergy."

Fortunately, she says, after that first disappointing encounter, she sought out Duke's Wesley Burks, MD, chief of pediatric allergy and immunology. In Burks, she says, she found a physician who is not only a research leader in food allergies, but an involved clinician.

"My kids love him, and the thing I like as a parent is that Dr. Burks will talk with the kids himself. I'm sitting there, but his conversation is with the kids, making

◀ Wesley Burks, MD, chief of pediatric allergy and immunology at Duke, is developing a peanut-allergy vaccine.



them feel important and asking them for their contribution in terms of what's bothering them or what they want help with. I think at their age, it's very important to have that kind of a relationship, to feel like they're an important part of making decisions about their life."

THE ALLERGY DETECTIVE

To Burks, taking time with each patient is more than just good bedside manner. Such involvement is necessary both to properly diagnose subtle, potentially deadly food allergies and also to help patients develop the extensive lifestyle habits necessary to live with food allergies.

Diagnosis can be challenging, he says, because many people assume that any reaction to a food is an allergy.

"A lot more people think they're allergic to foods than actually are," he says. "The public perception is that about 30 percent of the population has a food allergy. But the scientific reality is about 6 to 8 percent of children and 3 to 4 percent of adults are allergic. I think what happens is that people eat all kinds of foods, and if they have a reaction—perhaps viral gastroenteritis or food poisoning—they happen to associate it with one of the foods they've eaten." So, a detailed clinical history is a must, says Burks.

"You need to find out the timing of the ingestion and the clinical symptoms," he says. "Reactions to an allergen such as peanuts occur literally within minutes, not more than an hour or two, after ingestion. So, if the patient ate the food four hours ago and they're having symptoms now, then it's probably not an allergy. Food allergy symptoms are also isolated to the GI tract, the respiratory tract, and the skin. And, they're reproducible. Each time they have the food, they ought to have fairly similar symptoms." Such symptoms, says Burks, include abdominal cramps, vomiting, diarrhea, skin symptoms like hives or itchy rash, difficulty breathing, and swelling of the lips or the eyes. He counsels parents to report any such symptoms to their physicians, and physicians to pay careful attention to such reports and take appropriate actions to refer patients to allergists.

Besides a careful clinical history, diagnosis also depends on tests to measure the blood level of the immune protein IgE that triggers allergic reactions, and skin tests for sensitivity.

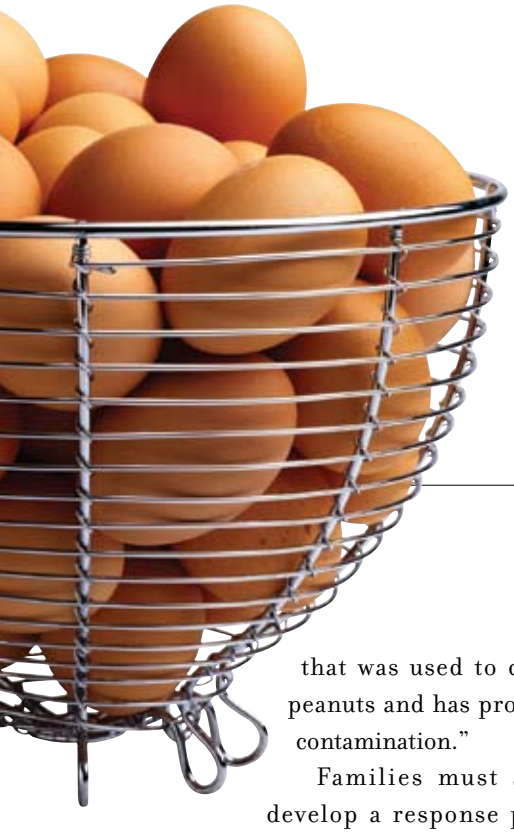
Food allergies typically appear between 6 and 18 months of age, says Burks, since that is when many youngsters first sample foods such as peanut butter. While children often outgrow certain food allergies, such as to eggs and milk, peanut allergies are usually for life.

LIVING WITH ALLERGIES

The first line of defense is avoiding foods containing an allergen such as peanuts, says Burks. That means families with food allergies must scrutinize the ingredients of everything they eat—not an easy task. The federal Food Allergen Labeling and Consumer Protection Act, which goes into effect in January 2006, will simplify the task somewhat by requiring such measures as plainer labeling of foods with allergens—but hazards will still abound.

"Peanuts are in foods people don't even realize," Burks says. "For example, homemade chili or Rice Krispies treats may have peanuts. And Asian food may either have peanuts in it, or be cooked in a wok

> "Everyone is watching Dr. Burks's work because it could be lifesaving for millions of kids."
>
> —Anne Munoz Furlong



Duke researchers are clinically testing a desensitization therapy that involves giving patients tiny amounts of egg or peanut protein orally in an attempt to gradually desensitize their immune systems.

that was used to cook peanuts and has protein contamination."

Families must also develop a response plan should a severe allergic reaction occur—giving the person an antihistamine and epinephrine using an EpiPen and immediately taking them to the nearest emergency room.

This is especially important because allergic reactions are highly unpredictable. The same amount of allergen that caused only mild symptoms in the past can abruptly trigger severe anaphylaxis. "In our fatality studies, we found over and over again that a large number of patients never had a severe reaction until the day they died," says Anne Munoz Furlong, director of the Food Allergy and Anaphylaxis Network (FAAN).

Teenagers are at especially high risk of death, she says. An important insight into reasons for their heightened risk came from a FAAN survey of parents and teenagers. In that survey, parents said the most difficult part of coping with a food allergy was the fear that their child would die. But the teenagers cited as most difficult not fitting in with their friends and being socially excluded, notes Furlong. "They're out with friends, they want to be like everybody else, they're not expecting to eat a food that will cause a reaction, and they're not carrying their epinephrine. And so one thing leads to the other."

Fortunately, says Burks, support groups such as FAAN (www.foodallergy.org) offer teens and their families invaluable news and information on coping with food allergies, as well as critical support.

Such support is becoming more important given the enormous increase in food allergies. "The numbers are staggering—eleven million Americans have food allergies and one-and-a-half million have a peanut allergy," she says. "We conducted prevalence studies of peanut and tree nut allergy in 1997 and 2002 and found in that five-year period the incidence of peanut allergy in children had doubled. This is a lifelong allergy that is responsible for the majority of allergy-related deaths."

PEANUT ALLERGIES PROLIFERATE

What's behind the alarming rise in peanut allergy? There are two main theories, according to Burks. First, unrecognized allergens may lurk in the processed foods that are increasingly common in the Western diet, heightening sensitivity to peanut and other allergens. Then there's the "hygiene hypothesis," which holds that in a Western culture of antibacterial products and obsession with hygiene, children are not as frequently exposed to microbes and allergens that would "train" their developing immune systems to react appropriately.

The rapid increase and hazards of food allergies mean that "The work that Dr. Burks is doing is very much something that everyone is watching, because it could be lifesaving for millions of kids as they grow into adulthood," says Furlong.

In their basic studies, Burks and collaborators—including former mentor Hugh Sampson of the Mount Sinai School of Medicine—have identified the predominant allergy-triggering proteins in peanuts. They have also explored the machinery of that allergic reaction, in which the peanut proteins attach to receptors on the surface of immune-system T cells. This attachment activates the T cells, which trigger production of an antibody called immunoglobulin E (IgE). IgE, in turn, becomes the molecular alarm that recognizes peanut proteins when ingested and launches the allergic reaction.

In studies with mice, Burks, Sampson, and their colleagues are experimenting with methods of altering the peanut protein so that it will damp the T cell's response—heading off subsequent production of IgE—and also not attach to pre-existing

ALLERGIC REACTION

IgE, tripping the allergic alarm.

Such experiments could lead to a vaccine against peanut allergy, in which the altered protein could be given to allergy sufferers to desensitize them to peanuts. The researchers have just received a grant from the National Institutes of Health to begin testing such a treatment in adults—collaborating with SEER Pharmaceuticals of Southport, Connecticut.

> "Food allergies are real, and people with them should be treated no differently than somebody with diabetes or heart disease."
>
> —Theresa Nguyen

More immediately, the researchers are clinically testing a desensitization therapy that involves giving patients tiny amounts of egg or peanut protein orally in an attempt to gradually desensitize their immune systems.

"So far the therapy has been surprisingly well accepted by the families, and the kids are having really minimal symptoms," says Burks. "Even those in the trial who have had accidental ingestions to, say, egg, haven't had reactions to it." According to Burks, while initial protein doses are the equivalent of about a hundredth of a peanut, after three months, patients can consume an entire peanut each day, as part of the treatment.

"We know we're changing their immune system in some way over those three months," says Burks, "but only longer-term studies will tell us whether the tolerance is permanent."

Says Furlong, "We're very excited about this work because it's a very simple therapy. If it works, the treatment hopefully could be put into larger clinical trials and then become available to the public in fairly short order."

Burks and his colleagues are also participating in a clinical trial of the asthma drug omalizumab (trade name Xolair) as a treatment for peanut allergy. This therapy could also find rapid application, given that the drug is already on the market.

Both Burks and Furlong, however, caution that there will be no magic bullet against food allergies. Immunotherapies, drug therapies, vigilance against allergens, and preparation for allergic attacks will always be part of the arsenal against the disorder.

Still, says Burks, "I think that in five years we'll have combinations of treatments that will prove effective. And they will be applied according to the individual patient's needs. What we may do earlier in life, versus for an adult, may be quite different."

For Nguyen, on the front lines with her children, changing attitudes is also critical—among physicians, school administrators, and managers of any public facilities.

"Food allergies are real, and people with them should be treated no differently than somebody with diabetes or heart disease," she asserts. "It's a medical condition that we deal with as part of our life. We don't want labels; we don't want sympathy; we want people to be educated and to treat our kids like any other kids." □

For more information on Duke clinical studies related to food allergy, particularly peanut, egg, and milk, in both children and adults, please call ***919-668-1333*** *or e-mail* ***foodallergy@mc.duke.edu****.*

Are we overscreening older women for breast and cervical cancer?

by Truls Østbye, MD, PhD

Early discovery of asymptomatic and treatable cancers is the laudable goal of performing screening mammography and Pap tests in women. And the current guidelines from national organizations, including the American Cancer Society (ACS) and the U.S. Preventive Services Task Force (USPSTF), generally agree about the appropriate age to begin these tests and the optimal screening interval for women up to age 70.

After age 70, however, the lack of conclusive evidence muddies the water, especially concerning mammograms. The fact that the incidence of breast cancer continues to increase throughout life argues in favor of continuing mammograms past the age of 70. On the other hand, life expectancy obviously decreases with age, while the competing risk of dying from other causes increases rapidly, thereby reducing the number of years that can be saved through screening. Furthermore, there are no rigorous clinical studies demonstrating that screening women over 70 with mammography has a clear benefit. Self-selection also plays a role in previous observational and retrospective studies, since the healthiest elderly with lower risk of disease are more likely to undergo screening.

A group of researchers at Duke, including myself, set out to determine the frequency with which elderly patients reported receiving screening mammograms and Pap tests and look for predictors of utilization of these services.[1] We examined data from two national longitudinal surveys—the Health and Retirement Study (HRS), which contains information about health behavior, disease, disability, and medical care usage for a cohort born in 1931-1941, and the Asset and Health Dynamics Among the Oldest Old (AHEAD), a companion study that surveyed an older age group, people who were 70 years and older during the initial survey in 1993. Along with examining the reported breast and cervical cancer screening at two follow-up interviews, we also looked at explanatory variables, such as race, education, household income, smoking, exercise levels, and self-reported health.

EXPENSIVE PREVENTIVES

Our data analysis revealed a consistent age-related pattern of decline for both screening tests in both surveys and at both survey question periods (1995/96 and 2000). However, we also found that elderly women are receiving a large and increasing number of screening mammograms and Pap tests, despite the lack of evidence supporting their beneficial effect in older women. Based on United States population data and the proportion of each age group in the AHEAD survey who had undergone a screening test, at a cost per mammogram of $100 and per Pap test of $14.60, we estimate that in 2000 women age 70 and older underwent 4.6 million screening mammograms at an annual cost of $460 million and 3.7 million Pap tests at an annual cost of $47 million. These amounts do not include the cost of follow-up visits or subsequent clinical management of any problem.

Even though both tests are covered by Medicare and therefore not paid for directly by the seniors, the societal costs of continuing such testing are substantial. This is especially notable for Pap tests, since the relative rates of mortality from cervical cancer in elderly women are low, and there is a lack of evidence in randomized controlled trials to support its use. In addition, current ACS recommendations state that women over age 70 who have had three consecutive negative Pap tests during the prior 10 years may discontinue screening. The USPSTF recommends discontinuing screening at age 65 provided women have had adequate recent screening with normal Pap results (although "adequate recent screening" is not defined).

QUESTIONING BENEFITS

Although we did not address this issue in our study, the benefits of screening mammography continue to be con-

> "Elderly women are receiving a large and increasing number of screening mammograms and Pap tests, despite the lack of evidence supporting their benefits in older women . . . . The societal costs of continuing such testing are substantial."

troversial even in younger women. Some experts believe that mammography has not had an effect on breast cancer survival, citing randomized controlled trials from as far back as the 1960s to support their claim. Others point out the flaws of those trials and note that technology has significantly improved the quality of mammograms while greatly reducing the associated radiation exposure. Because of conflicting results in clinical trials and uncertainty about the risk-to-benefit ratio of screening, the Canadian Task Force on Preventive Health Care does not support nor discourage screening mammography for women ages 40 to 49 at average risk of breast cancer. United States guidelines for women are clearer: the ACS states that women age 40 and older should have a screening mammogram every year and should continue to do so for as long as they are in good health, whereas the USPSTF recommends mammography every one to two years starting at age 40. But for women over age 70, the USPSTF guidelines note that there is insufficient evidence to recommend for or against routine mammography, and the ACS recommendations do not address this age group directly.

BETTER INVESTMENTS

A significant problem of screening, one not confined to the elderly, is access to care. The healthiest people with the lowest risk of disease are those most often screened—in other words, those who need screening the most are the least likely to receive it. Fortunately, there is an alternative for these women. The National Breast and Cervical Cancer Early Detection Program, administered by the Centers for Disease Control and Prevention, helps low-income, uninsured, and underserved women gain access to screening programs for early detection of breast and cervical cancers. Since its establishment in 1991, the program has screened 1.9 million women and diagnosed approximately 17,000 breast cancers, 61,000 precancerous cervical lesions, and 1,200 cervical cancers. Perhaps our limited health care dollars are better spent on programs such as this one instead of using Medicare dollars to screen older women.

It is clear that mammography and Pap tests continue to be performed in the elderly, at a substantial societal cost, despite limited scientific evidence supporting it. We need to focus research efforts on documenting screening efforts in the oldest population group, examining the benefits of and the rationale behind those screening practices. Furthermore, screening among the elderly should be better and more specifically addressed in national clinical guidelines. Without guidelines, doctors must err on the side of caution because of the social and legal consequences of discontinuing screening, even in the most fragile elderly.

Dr. Østbye is a professor in the Department of Community and Family Medicine at Duke.

REFERENCE:

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Ann J. Brown, MD

clinician q&a

q: What are the current recommendations for diagnosing and managing Polycystic Ovary Syndrome (PCOS)?

a: Ann J. Brown, MD, assistant professor of medicine in Duke's Division of Endocrinology and assistant professor in the Department of Obstetrics and Gynecology, responds:

POLYCYSTIC OVARY Syndrome (PCOS) is a common condition affecting approximately 5 to 10 percent of women in their reproductive years—in fact, it the most common endocrine condition affecting women of this age group. Despite its prevalence, PCOS is currently underdiagnosed and under-treated. Only in the past 10 to 15 years have researchers and clinicians begun to understand the full range of reproductive, metabolic, and other health concerns linked to the syndrome. These include reduced fertility, insulin resistance, early diabetes, dyslipidemia, hypertension, endometrial hyperplasia, and possibly fatty liver and heart disease. Early diagnosis and discussion of the health consequences of PCOS are critical for preparing patients to engage in the disease prevention strategies that will help them to achieve and maintain good health.

DIAGNOSIS

The clinical hallmarks of PCOS are chronic anovulation and hyperandrogenism. Women with PCOS typically report long-term irregular menses (and possibly infertility) and slowly progressive symptoms of hyperandrogenism such as hirsutism, acne, and/or male-pattern hair loss. Some may show biochemical evidence of hyperandrogenism, such as elevated testosterone levels. Though the syndrome varies in expression from person to person, these two elements (chronic anovulation and either clinical or biochemical evidence of hyperandrogenism), and the exclusion of other causes (see below) establish the diagnosis of PCOS.

According to this definition of the syndrome, created at a National Institutes of Health conference of experts in 1990, women with PCOS may or may not have polycystic-appearing ovaries on ultrasound. Recently, other experts have proposed that the definition of PCOS be modified to include the morphologic appearance of the ovaries. In the 2003 Rotterdam definition of the syndrome, a diagnosis of PCOS requires two of the following three elements: chronic anovulation, clinical or biochemical hyperandrogenism, and/or polycystic-appearing ovaries by ultrasound. Currently, the debate continues about the role of ovarian morphology in the diagnosis of PCOS.

There are important conditions associated with PCOS that are not part of the clinical definition. For instance, though at least 50 percent (and in some studies, up to 80 percent) of women with PCOS are overweight or obese, weight does not define the syndrome. Patients may be thin or overweight. Similarly, though insulin resistance is common in this population, it is not required for the diagnosis, and may not be measurably present in every patient. And finally, an elevated LH/FSH ratio, previously considered a hallmark of the syndrome, is no longer used to confirm the diagnosis of PCOS. The pulsatile pattern of LH secretion makes measurement at a single time point a poor reflection of overall levels.

LAB TESTING

The diagnosis of PCOS can be made on the basis of history and clinical observations alone. For instance, a woman with chronically irregular menses and slowly progressive hyperandrogenism from the time of menarche most probably has PCOS. But confirmation of the diagnosis requires that other conditions that mimic PCOS be ruled out. They include Cushing's syndrome, an androgen-secreting tumor, late-onset congenital adrenal hyperplasia (CAH), hyperprolactinemia, and thyroid dysfunction. A good history can provide clues to distinguish PCOS from these other diagnoses. For instance, a distinct change in cycle length and/or hirsutism would be more typical of Cushing's syndrome or an androgen-secreting tumor. Late-onset CAH is harder to distinguish on the basis of history alone, though a family history can suggest it. Hyperprolactinemia and thyroid dysfunction can cause irregular menses, but do not typically produce hirsutism. When it is not clear from the history, lab testing can rule out these other diagnoses, and firmly establish the diagnosis of PCOS.

The other role of lab testing is to characterize metabolic problems associated with PCOS. These include insulin resistance and early diabetes, dyslipidemia, and possibly hepatic steatosis or steatohepatitis.

A suggested initial work-up would include the following (see Table 1):

"Only in the past 10 to 15 years have researchers and clinicians begun to understand the full range of reproductive, metabolic, and other health concerns linked to Polycystic Ovary Syndrome."

- **To rule out other conditions:**
  - Thyroid and prolactin studies on all patients
  - Testosterone levels in patients with:
    - irregular menses but little clinical evidence of hyperandrogenism (to confirm PCOS) or
    - hyperandrogenism symptoms with evidence of masculinization (deepening voice, clitoromegaly), or change in menstrual or androgen-related symptoms (to rule out an androgen-secreting tumor)
  - 24-hr urine for cortisol and creatinine if there is clinical evidence of Cushing's Syndrome
  - 17 hydroxy-progesterone to screen for late onset CAH if there is a family history of the condition. In most cases, the treatment for PCOS and late onset CAH is similar, so routine screening is optional.
- **To evaluate for metabolic complications:**
  - Modified 2-hr glucose tolerance test (see Table 1)
  - Fasting lipoprotein profile
  - Liver transaminases

TABLE 1: LAB TESTING IN PCOS

TEST	EVALUATION FOR:	COMMENT
Total testosterone	Androgen-secreting tumor	>200 ng/dl should prompt a workup for androgen secreting tumor. Other measures of hyperandrogenemia might include free testosterone by equilibrium dialysis or bioavailable testosterone. More moderate elevations in testosterone or other androgens can be useful in diagnosing PCOS when clinical evidence (e.g. hirsutism) is not clear.
a.m. 17-hydroxy-progesterone	Late-onset congenital adrenal hyperplasia	Screening test for a partial adrenal enzyme defect that leads to impaired cortisol production, compensatory elevation in ACTH, and hyperstimulation of the adrenal androgen pathway.
24-hr urine for cortisol and creatinine	Cushing's Syndrome	Evaluate for cortisol excess, particularly in women with a change in menstrual pattern, later-onset hirsutism, and other signs of Cushing's Syndrome such as hypertension, supraclavicular fullness, and fragile skin.
2-hr GTT	Insulin resistance, impaired glucose tolerance, type 2 diabetes	Consider this for all overweight/obese women with PCOS, particularly those with a family history of type 2 diabetes or other risk factors for type 2 diabetes.
Fasting lipid profile	Dyslipidemia	Evaluate for lipid abnormalities associated with insulin resistance syndrome: TG >=150mg/dl, HDL<50 mg/dl
ALT/AST	Hepatic steatosis	Elevated liver transaminases, in the absence of other causes of liver disease, may indicate non-alcoholic fatty liver disease (NAFLD) or steatohepatitis (NASH).
Prolactin	Hyperprolactinemia	Evaluate for other cause of oligo-amenorrhea
Thyroid function studies	Hyper- or hypo- thyroidism	Evaluate for other cause of oligo-amenorrhea

INSULIN RESISTANCE AND PCOS

About 80 percent of women with PCOS have some degree of insulin resistance, and 40 percent have impaired glucose tolerance or type 2 diabetes by age 40. Because diabetes can be prevented or delayed through lifestyle or medication intervention, early detection is clinically important. Testing is especially important in women with other risk factors for diabetes, such as a history of gestational diabetes, a family history of type 2 diabetes, age over 45, excessive weight (particularly those with central obesity), and those with hypertension or dyslipidemia.

Glucose tolerance testing: A fasting glucose test is the most common test for early diabetes. However, a glucose tolerance test (GTT) provides additional information that is crucial for early detection of insulin resistance and pre-diabetes. The test most often done in our clinic is a modified GTT. This is shorter and requires fewer blood draws than the typical GTT. To perform this test, a fasting blood sample is drawn for glucose and insulin. A second blood sample for glucose and insulin testing is drawn two hours after the patient drinks a 75-gram oral glucose solution. Normal and abnormal values are described in Table 2. This modified two-hour GTT can provide information about insulin resistance (elevated insulin levels) and establish whether a patient has impaired fasting glucose, impaired glucose tolerance, or type 2 diabetes. Since postprandial hyperglycemia occurs well before fasting hyperglycemia, the GTT is a useful metabolic "stress test" to detect the earliest warning signals for diabetes. If a GTT is impractical, fasting glucose and insulin, or a timed single-glucose value measured two hours after a meal are also useful.

Additional lab testing: Other tests useful in characterizing metabolic status are a fasting lipid profile and liver function studies. These tests may uncover hypertriglyceridemia/low HDL or evidence of hepatic steatosis. In women who have been amenorrheic for longer than six to 12 months, and thus have had prolonged endometrial exposure to unopposed estrogen, an evaluation for endometrial hyperplasia should be considered.

TABLE 2: INTERPRETATION OF GLUCOSE TOLERANCE TEST RESULTS

	FASTING GLUCOSE (MG/DL)	2-HR GLUCOSE (MG/DL)	FASTING INSULIN* (UIU/ML)	2-HR INSULIN* (UIU/ML)
Normal	<100	<140	<10	<40
Insulin Resistance	<100	<140	>10	>40-80
Impaired Fasting Glucose	>=100			
Impaired Glucose Tolerance or "Pre-diabetes"		>=140 but <200		
Diabetes	>=126	>=200		

* These insulin values are guidelines. There is no consensus about clinical cut-points for normal and abnormal insulin levels. These values are taken from the PCOS research literature. **Source:** American Diabetes Association.

Insulin resistance and hyperandrogenism: what's the connection?: Several studies, including both in vitro and in vivo experiments, have demonstrated that insulin and androgen levels are related in women with PCOS. It appears that insulin stimulates ovarian thecal cells to produce testosterone. That is, hyperinsulinism drives hyperandrogenism. In vitro studies have shown this effect in ovarian tissue from women with PCOS, but not in tissue from normally ovulating women, suggesting that this is a unique feature of PCOS. Interventions that improve insulin sensitivity in women with PCOS, such as metformin, the thiazolidinediones, and weight loss, have all been shown to decrease both insulin and testosterone levels. This connection between insulin and ovarian androgen production links the reproductive and metabolic elements of PCOS, and has given rise to useful therapeutic strategies that take advantage of this link.

MANAGING PCOS

Management of PCOS should address reproductive, metabolic, and psychosocial issues, each of which is discussed below.

Fertility: This is usually the first issue to address, since it influences the rest of management in the near future. If pregnancy is an immediate goal, therapy should focus on lifestyle changes that will improve insulin resistance and ovulatory rate. Strategies that have been shown to improve ovulatory rate include modest weight loss and increased activity, and insulin sensitizers. Metformin is now used commonly as a first-line agent in both overweight and thin women with PCOS. If metformin fails, clomiphene can be added to improve ovulatory rate. The current recommendation from the American College of Obstetricians and Gynecologists is to stop metformin when pregnancy occurs, but the continued use of this agent during pregnancy is being investigated.

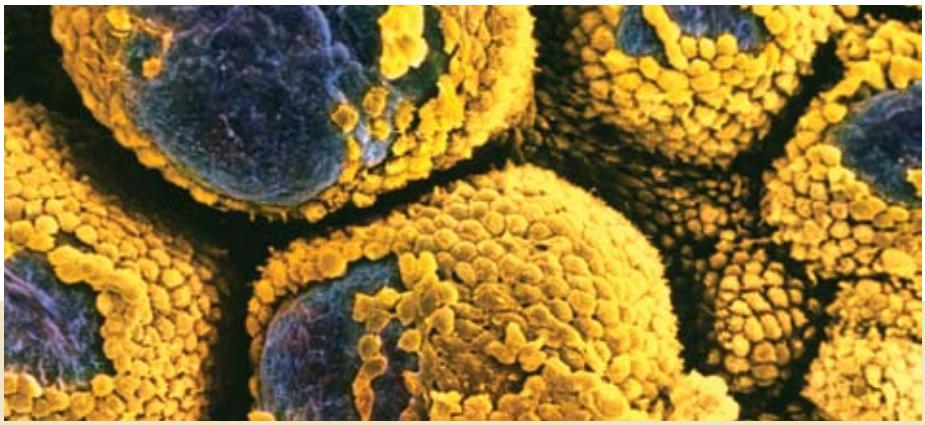
Menstrual cycle: Prolonged anovulation in women with PCOS is associated with endometrial estrogen exposure that is unopposed by progesterone. Progesterone is normally produced by the corpus luteum following ovulation. In the absence of ovulation, and the progesterone production that accompanies it, endometrial proliferation, hyperplasia, and cancer can develop. To prevent these conditions, cycle control is an important therapeutic goal in PCOS. This can be accomplished in several ways. Cyclic progesterone, given every one to three months, induces regular endometrial shedding. Estrogen-containing oral, transdermal, or vaginal ring contraceptives are commonly used because they induce regular menses and provide contraception. They also reduce ovarian testosterone production and increase sex-hormone-binding globulin, both of which will improve hyperandrogenic symptoms. In women with hypertension or in those who smoke, estrogen-containing contraceptive agents are relatively contraindicated. In these women, endometrial protection can be accomplished with a progestin-only agent, such as Micronor, though this drug will do nothing to treat hirsutism and acne. Finally, therapies such as metformin and weight loss improve insulin sensitivity and increase ovulatory rate in some women with PCOS. In those who respond with increased menstrual frequency, metformin can be a useful non-hormonal agent for cycle control. Metformin also produces a modest reduction in testosterone and might offer some relief from hyperandrogenic symptoms. The thiazolidinediones also improve ovulation rate and insulin sensitivity, but should be used cautiously in women with PCOS because of the potential teratogenicity (Class C), weight gain, and need for frequent liver-function testing during use.

Metabolic issues: Therapeutic lifestyle changes are the cornerstone of therapy for women with PCOS, particularly for those who are overweight or obese and/or have markers of metabolic disease such as insulin resistance, dyslipidemia, or hypertension. Even modest lifestyle changes, such as walking 150 minutes weekly and losing 7 to 10 percent of body weight, have been shown to reduce diabetes risk in patients with impaired glucose tolerance. In women with PCOS, similar lifestyle changes improve fatty liver, and, as mentioned above, increase ovulatory rate and improve insulin sensitivity.

Medications can also improve metabolic profile. As mentioned above, metformin and the thiazolidinediones reduce insulin resistance. And some patients, but not all, report weight loss with metformin. A review summarizing multiple studies found a consistent decrease in BMI of about 4 percent in women who used metformin. But there have been no clinical studies in women with PCOS examining whether these agents improve other metabolic outcomes, such as progression to diabetes.

It is worth re-emphasizing that insulin-sensitizing agents such as metformin and the thiazolidinediones increase ovulatory rate. To avoid accidental pregnancy, women who receive these agents should be counseled about using adequate contraception.

Clinical practice has jumped ahead of evidence in the use of metformin, and it is important to maintain a healthy skepticism about prescribing the drug as a first-line agent. More clinical research is needed to understand who benefits the most from metformin use, the most effective doses, and the



Polycystic ovary: electron micrograph (SEM) of a polycystic ovary, showing a number of cystic follicles bulging from the wall of an ovary. These follicles are sterile; ovulation will not take place.

expected benefits. Though it is time-consuming and not always immediately successful, lifestyle therapies should be strongly and repeatedly emphasized as critical to long-term management. Since most overweight patients with PCOS have heard the recommendation to lose weight before, finding appealing and realistic interventions and offering support and non-judgmental acceptance are important therapeutic interventions in themselves.

Cosmetic issues: Hirsutism and acne can be effectively treated with estrogen-containing contraceptives. Currently available oral preparations that contain 20 to 35 mcg of ethinyl estradiol are generally similar in their efficacy in treating hirsutism, giving some flexibility in choosing one that is tolerated by an individual patient. These agents reduce testosterone by decreasing the ovaries' production of LH-stimulated testosterone and by increasing sex-hormone-binding globulin (SHBG), which reduces the amount of free (active) testosterone. Progestin-only pills will not affect hyperandrogenism. If oral contraceptives produce an inadequate clinical response, spironolactone can be added. Better known for its diuretic effect, this agent also effectively blocks androgen action. Since it can raise serum potassium levels, levels should be monitored, particularly in patients with renal dysfunction. The topical agent Vaniqa (enflurane 13.9 percent) slows hair growth. Neither spironolactone nor Vaniqa should be used in women who are pregnant or trying to get pregnant.

Laser hair removal and electrolysis are the only modalities that can induce permanent hair reduction. Laser is most effective in patients with light skin and dark hair. Newer lasers can be used to treat women with dark skin. Risks of laser include burning and scarring, so patients should be encouraged to seek out very experienced technologists, preferably in a center where a physician provides active oversight of therapy.

Psychosocial issues: Very little research has systematically evaluated the psychological issues associated with living with PCOS. Small studies suggest a higher prevalence of depression in women with PCOS. Anecdotally, this might be expected on the basis of chronic body image and fertility concerns. In my own clinic, women frequently report a long history of stressful encounters with their health care providers. They report feeling as if their concerns were minimized ("A little facial hair is not a big deal. Just shave it."), oversimplified ("Just lose weight."), or that they could not get the answers they wanted about metabolic issues ("Come back when you want to have a baby. Till then, there's nothing I can offer you."). Non-judgmental listening and acceptance may be therapeutic for many women living with PCOS.

CONCLUSION

PCOS is a common and multifaceted syndrome with important health complications. Because complications arise throughout the lifespan, all patients should be supported by knowledgeable and compassionate primary caregivers. Patients need a provider, or team of providers, who can address metabolic, reproductive, and psychological concerns. Because PCOS is the subject of active investigation and treatments are evolving, some patients may find it useful to consult with a specialist. Consultation can provide updated management recommendations and assistance with high-risk patients. In my view, patients with insulin resistance or components of the insulin resistance syndrome (central obesity, high blood pressure, high TG/low HDL, insulin resistance or high blood sugar) should be referred to a medical endocrinologist. Similarly, patients with infertility, particularly those beyond their late twenties, should consider consultation with a reproductive endocrinologist.

PCOS therapy should be tailored to meet the needs and goals of the patient. If pregnancy is the immediate goal, activity, modest weight loss, and metformin therapy are effective options for improving ovulatory rate. If pregnancy is not a near-term goal, sights should be set on a long-term patient/provider relationship designed to build acceptable strategies for disease prevention. Diabetes is a well-documented complication of PCOS and can be prevented in high-risk individuals with therapeutic lifestyle changes and medical therapy. Because these insulin-sensitizing therapies may also improve fertility, contraception should be discussed with patients who do not desire pregnancy. Endometrial hyperplasia and cancer, potential consequences of the prolonged estrogenic amenorrhea associated with PCOS, can be managed with regular progesterone therapy, either in the form of cyclic progesterone or the contraceptive pill, patch, or vaginal ring. Cosmetic problems such as acne and hirsutism can be improved with estrogen-containing contraceptives, with or without the addition of spironolactone or Vaniqa. Laser and electrolysis are reasonably effective permanent hair-removal options. Finally, living with PCOS presents psychological challenges that are critical for health care providers to address. Doing so may help relieve some suffering associated with the condition, and help patients make the difficult behavioral changes needed to achieve and maintain good health.

PATIENT RESOURCES FOR PCOS

pcosupport.org The Web site of the Polycystic Ovarian Syndrome Association.
SoulCysters.com An online community of women with PCOS.

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Embodying philanthropy

"… I'll always remember what we were told on the first day: this is the ultimate gift these people could ever give to us—themselves. That is something I still keep with me."

—Robyn Frank, PA

EACH YEAR A SPECIAL SERVICE at Duke Chapel honors an extraordinary group of philanthropists—the people who have donated the bodies of their loved ones to the Duke Anatomical Gifts Program.

These unique and priceless gifts provide the source of knowledge that is the foundation of medical education and research. At Duke, hundreds of students, residents, fellows, and attendings benefit as they explore the complex, elegant, and subtle structures of the human body in the renovated Medical Student Anatomy (MSA) Lab and the Human Tissue Laboratory (HTL).

Although every medical school has a gross anatomy lab (and every current and former medical student vividly remembers its sights and smells), Duke's HTL is a unique teaching facility, says surgeon Scott Levin, MD, who founded the HTL a decade ago and now oversees the Anatomical Gifts Program. Set up as a working operating room, the HTL serves as a learning lab for residents, fellows, and attendings to study anatomy, practice surgical technique, and develop new surgical procedures. The recent renovations have created a state-of-the-art facility with video capability, so that others can observe remotely. "We've had an extensive number of articles published in peer-review journals generated by work in the lab," says Levin, who is chief of plastic, reconstructive, maxillofacial, and oral surgery and a professor of orthopaedic surgery.

The two labs and the Anatomical Gifts Program now fall under one umbrella, administered by Levin. He reports to a newly created oversight committee, with representatives from the several departments, the medical school body, and the community. The committee oversees the procurement policies, the ethical use and disposal of anatomic materials, and the civil, religious, and legal issues related to donations. Duke established the committee partly in response to the 2004 scandal concerning the illegal sale of body parts by the director of UCLA's willed body program, "but we had no problems like that," Levin says. "We wanted to be proactive, not reactive, and provide a leadership role throughout the country as far as dealing with every aspect of anatomical donations in a proper and dignified way."

In addition to the 100 new medical students who spend nearly 16 weeks within its walls each year, the MSA Lab offers training opportunities for future physician assistants, physical therapists, pathology associates, and biomedical engineers. "The anatomy lab was my first time with human dissection," said Robyn Frank during her first year as a PA student. "I had hesitancies in the beginning dealing with the whole thing, but I'll always remember what we were told on the first day: this is the ultimate gift these people could ever give to us—themselves. That is something I still keep with me."

"Dissection is a difficult way to learn," says Matt Cartmill, PhD, a long-time anatomy instructor in the MSA Lab. "But dissection teaches in a way that textbooks and computers cannot. It educates the hands of our future physicians, giving them tactile knowledge about different types and parts of bodies. It teaches them the uniqueness of each human being, and shows them that the thoughts and habits of each person leave their traces in the body."

For more information on the Duke Anatomical Gifts Program, please call 919-684-4250.

Gifts from individuals and organizations are the largest source of non-government support for Duke's research, education, patient care, and service missions. Here are some recent examples of philanthropic partnerships that will make a difference to human health for generations to come. **To learn more about how you can support medical education, research, and patient care at Duke, please call 919-667-2500 or visit development.mc.duke.edu.**

Tisch family names Duke's brain tumor program

The Duke Comprehensive Cancer Center received the largest gift in its history, **$10 million**, from the Preston Robert Tisch family of New York, N.Y. One half of the gift will support basic and clinical research on new brain tumor drugs. The remaining $5 million has been matched with $5 million by the Medical Center to establish the $10 million Preston Robert Tisch Cancer Investigators Fund to recruit and support the work of leading cancer researchers at Duke. Duke's Brain Tumor Center will be named to honor Tisch (above), who died in November. He was chairman of Loews Corporation and co-owner and co-CEO of the New York Giants football organization.

"Bob was a great humanitarian and an accomplished leader," said Henry Friedman, MD, co-leader of the Brain Tumor Center at Duke. "We are proud that with his generous support, Duke will continue its leadership in the eradication of all types of cancer."

Kingsdown supports initiatives for children

A **$500,000 gift** from Mebane-based bedding manufacturer, Kingsdown, Inc., and its owner, Eric Hinshaw, will allow Duke Children's to provide medical care closer to home for some North Carolina children. The gift will support three initiatives: expanding Duke neonatal services to Alamance Regional Medical Center and Moore Regional Hospital, establishing a Duke-affiliated pediatric cardiology practice in Fayetteville, N.C., and providing mental health and substance abuse services in Durham County.

Gift of gratitude honors MD alumnus

When St. Louis, Mo., intellectual property law attorney Timothy Keane's life was saved by cardiothoracic surgeon Michael C. Mauney, T'87, M'91, Keane wanted to show his gratitude. His **$100,000 gift** in Mauney's honor will provide $50,000 to the Fund for DukeMed Davison Club Scholarship Fund and $50,000 to a Davison Club endowment established by Mauney's father, the late F. Maxton "Mac" Mauney, MD'59.

Gross gift provides medical student financial aid

Duke University alumnus William H. Gross, T'66, and his wife, Sue, have given **$5 million** to the Duke University School of Medicine for student financial aid. Gross is the chief investment officer and a founder of the Newport Beach, California-based PIMCO, one of the world's largest bond management firms. He has expressed gratitude for the care he received at Duke Hospital when—as an undergraduate student—he was injured in an automobile accident. The gift is part of a larger $23.5 million gift to Duke University, including $20 million for financial aid and $3.5 million to support faculty members in Duke's Fuqua School of Business and other priorities. Duke is among a small group of colleges and universities nationally that are committed to a need-blind admissions policy.

APPOINTMENTS


Michael Cuffe, MD


William Fulkerson, MD


Paul Newman

Three new seats on executive bench

Victor J. Dzau, MD, chancellor for health affairs, announced in July the creation and fulfillment of three vice presidency positions by the Duke University Health System (DUHS) Board of Directors: **Michael Cuffe, MD,** vice president for medical affairs; **William J. Fulkerson, MD**, vice president for acute care division; and **Paul Newman**, vice president for ambulatory care division.

"There is a need for developing a highly efficient, standardized, patient-centered approach throughout the patient experience. We believe we can best respond to this opportunity by integrating our ambulatory care services under the leadership of Paul Newman. He will oversee all outpatient services, whether the care is provided in Duke physician clinics, freestanding ambulatory centers, or through our home care organization," said Dzau in announcing the new structure.

While focusing attention on ambulatory care, the Board of Directors also recognized the increasing demand for hospital services. Duke hospitals will respond increasingly as a joint unit to improve capacity and efficiency. Bringing together all three hospitals into one division under Fulkerson's leadership will facilitate the strategic alignment and the efficient use of hospital capacity and resources, officials said. Fulkerson will remain as CEO of Duke University Hospital. Reporting directly to him will be Jim Knight, CEO of Duke Health Raleigh Hospital, and David McQuaid, CEO of Durham Regional Hospital.

Over the past seven years, several individual collaborative programs have been created between hospitals within the health system. For example, Durham Regional Hospital handles all Duke bariatric surgery, and there is close collaboration between the intensive care nurseries at Duke University Hospital and Durham Regional Hospital. With focused leadership in the acute care division, Dzau believes Duke can become even more strategic regarding the allocation of resources as an entire system, rather than program by program.

"By aligning our hospitals, we can ensure that we provide the best care in the best place for our patients. Greater focus on integration will also allow us to improve performance standards in clinical outcomes, finances, and safety through creating common information technology platforms, common clinical standards and quality metrics, and common patient safety expectations and standards," said Dzau.

In recognition of the vital importance of Duke physicians and providers, the DUHS Board of Directors asked Cuffe to serve as vice president for medical affairs. In his new role, Cuffe serves as an advocate for physicians and patients across DUHS. He has primary responsibility for coordinating the activities of the physician groups affiliated with DUHS, including members of the PDC, DUAP, and community physicians practicing at DUHS-owned or operated facilities. He also works closely with Karen Frush, MD, chief patient safety officer, to track and improve safety issues, and will be instrumental in helping DUHS develop an ambulatory electronic medical record and other tools that are useful to physicians and patients. Cuffe also serves as liaison with patients and chairs a new DUHS patient advocacy group.

These three vice presidents will work closely together, meeting several times a week with Dzau and other members of the executive leadership team.

Laparoscopy pioneer named chief of endosurgery

Eric J. DeMaria, MD, has been named chief of endosurgery and vice chairman of network general surgery at Duke University Medical Center. The announcement was made by Duke surgery chairman Danny O. Jacobs, MD.

DeMaria, known for his contributions to advanced laparoscopic surgery, began his new duties at Duke July 1. He comes to Duke from Medical College of Virginia, where he served as chief of general and endoscopic surgery and director of the MCV Center for Minimally Invasive Surgery.

His new responsibilities will include directing the minimally invasive surgery programs, as well as Duke's bariatric surgery program, located at Durham Regional Hospital, where he will also assume the position of chief of Duke general surgery.

DeMaria received his medical degree at the Boston University School of Medicine in 1983, and completed seven years of advanced surgical training at Brown University/Rhode Island Hospital, Providence, Rhode Island. He has also served on the faculties of Virginia Commonwealth University Medical Center and Boston University Medical Center.

Vascular surgeon appointed to lead Center of Excellence efforts

Cynthia K. Shortell, MD, has been named chief of vascular surgery at Duke University Medical Center.

Shortell comes to Duke from the University of Rochester School of Medicine and Dentistry, New York, where she served as associate professor of surgery and associate professor of pathology.

She is known for performing both open and minimally invasive surgery of the aorta and the lower extremities, as well as carotid endarterectomies, in which surgeons open blocked arteries that supply the brain with blood. Shortell also has research interests in the use of clot-busting and blood-thinning drugs for the treatment of blocked blood vessels and for the prevention of stroke.

"Dr. Shortell will lead our effort to establish Duke as integrated Center of Excellence in vascular medicine and will further enhance our clinical and educational programs," said Duke surgery chairman Danny O. Jacobs, MD, in announcing the appointment.

Shortell received her medical degree from Cornell University Medical College in 1984. She completed her residency at the University of Rochester, as well as fellowships in vascular surgery and hematology, before joining the Rochester faculty in 1993.

Burks to steer clinical research center

A. Wesley Burks, MD, has been appointed program director of Duke's General Clinical Research Center (GCRC) effective August 1.

Ross McKinney Jr., MD, vice dean for research in the Duke University School of Medicine, said that Burks's experience as a clinician, researcher, and institute director "will be of tremendous value as we re-evaluate the culture and mission of the Duke GCRC."

Burks and McKinney anticipate making significant changes in the Duke GCRC over the next several months. This period will help the center keep up with changing initiatives for translational and clinical research by the National Institutes for Health. Burks will help to create internal and external advisory groups, conduct strategic planning, review procedures for efficiency, and develop new faculty mentoring opportunities.

"Research facilities, such as the Duke GCRC and the DCRI [Duke Clinical Research Institute], are an essential component of Duke's comprehensive research strategy, which is to ensure that Duke remains a national leader in translational and clinical research in the United States," says McKinney.

Burks came to Duke in 2003 as professor and head of the Division of Pediatric Allergy and Immunology. He succeeds Louise Markert, MD, PhD, who stepped down as director of the GCRC in January after 11 years of service.


Judy Miller, RN, PhD


Elizabeth Clipp, RN, PhD


Philip Rosoff, MD

School of Nursing appointments

Catherine Gilliss, DNSc, RN, FAAN, the dean of the Duke University School of Nursing, recently made the following appointments:

- **Judy Miller, RN, PhD**, will become the associate dean for academic affairs effective January 1, 2006.
- **Elizabeth Clipp, RN, PhD**, has been appointed associate dean for research affairs. She will also continue her responsibilities as the director of the Trajectories of Aging and Care (TRAC) center.

The three academic degree programs will be supported by three program chairs who report directly to the associate dean for academic affairs. The program chairs are:

- **Judith Hayes, RN, PhD**, accelerated Bachelor of Science in Nursing (ABSN) program
- **Brenda Nevidjon, RN, MSN**, master's program
- **Ruth Anderson, RN, PhD**, PhD Program.

Morality mode for Rosoff

Philip Rosoff, MD, has been named the director of the Clinical Ethics Program for Duke University Hospital.

Rosoff, who has been chief of the Division of Pediatric Hematology-Oncology at Duke University Medical Center since 1995, will relinquish that position when he assumes his new duties on September 1. He is also an associate professor of pediatrics and assistant professor of medicine

In his new role, Rosoff will be responsible for chairing the Clinical Ethics Committee, as well as establishing a formalized Clinical Ethics Program at the hospital. In the first year of this program, the plan is to include ethics rounds on several units within the hospital, plus the development of educational programs for staff and residents.

Brown to oversee PDC

The Private Diagnostic Clinic (PDC) has appointed **Monte D. Brown, MD**, to serve as chief operating officer, effective September 1.

Brown has over 15 years of academic health care leadership experience, most recently as vice chairman of the Department of Medicine and Strategic Planning at Brigham and Women's Hospital, Boston and assistant professor of medicine at Harvard School of Medicine.

Along with other PDC leadership, Brown will be responsible for strategic development, implementation, and operation of the PDC. He will also take the institutional lead in coordinating activities with the Veterans Administration for DUHS and the PDC.

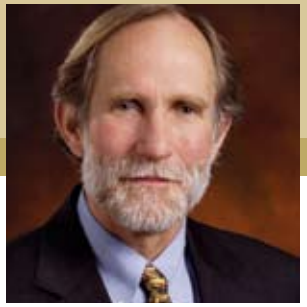
Med school appointments

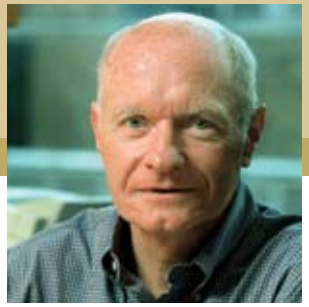
Edward Halperin, MD, vice dean of the Duke University School of Medicine, recently announced that three faculty members had received new appointments within the school.

Philip Goodman, MD, chief of thoracic imaging, was named an advisory dean. He has a strong interest in student education, serving as the course director for fourth-year radiology electives and as a small group leader for the PRACTICE course for first- and second-year students. Goodman also serves on the Curriculum Committee and the Capstone Committee.

Katherine Grichnik, MD, associate professor of anesthesiology and perioperative medicine, was named associate dean for Continuing Medical Education. She brings to the position a wealth of experience as the director of regional and national CME courses and as a member of a national CME oversight group.

Daniel Laskowitz, MD, a Duke medical alumnus who currently serves as the fellowship director in Neurocritical Care and as director of the Neurovascular Laboratory, was appointed director of the Third-Year Study Program. In this role he will chair the Third Year Subcommittee and oversee the third-year experience in the Duke curriculum.





Peter Agre, MD, and **James McNamara, MD**, were elected to the prestigious Institute of Medicine of the National Academy of Sciences in October.

Peter C. Agre, MD, vice chancellor of science and technology and professor of cell biology, and **James O. McNamara, MD**, Carl R. Deane Professor and chair of the Department of Neurobiology, were elected to the prestigious Institute of Medicine of the National Academy of Sciences in October.

Agre, who joined Duke earlier this year, shared the 2003 Nobel Prize in Chemistry for revealing the molecular basis for the movement of water into and out of cells. Aquaporins, the water-channel proteins he helped discover, have been shown to be part of the blood-brain barrier and also to be associated with water transport in skeletal muscle, lungs, and kidneys. Researchers worldwide now study aquaporins and have linked aberrant water transport to many human disorders.

McNamara, who founded the Duke Center for Advanced Study of Epilepsy, conducts research focused on mechanisms of "epileptogenesis"—the process by which a normal brain becomes epileptic. Insights gained from his research could provide new targets for drugs that could prevent epilepsy in individuals at high risk.

Erich Jarvis, PhD, received a $500,000 annual unrestricted grant for five years from the NIH.

Erich Jarvis, PhD, an associate professor of neurobiology at Duke, received the 2005 National Institutes of Health (NIH) Director's Pioneer Award in September. The award, which provides an unrestricted grant of $500,000 per year for five years, was established "to encourage highly innovative approaches to biomedical research that have the potential to lead to significant advances in human health," according to the institute.

Jarvis's research has concentrated on the neurobiology of vocal communication, using songbirds as a model. His studies have revealed new insights into the genetics and molecular biology of learned vocal communication. Jarvis also led an international consortium of neuroscientists that in 2004 proposed a drastic renaming of the structures of the bird brain to correctly portray birds as more comparable to mammals in their cognitive ability.

He plans to use his Pioneer Award to test a hypothesis about the genetic machinery underlying vocal learning that could pave the way for repairing vocalization disorders in humans.

Cell biologist **Brigid Hogan, PhD,** was elected to the National Academy of Sciences.

Brigid Hogan, PhD, chair of the Department of Cell Biology, was elected to the National Academy of Sciences in May. Membership in the Academy is considered one of the highest honors that can be accorded a United States scientist or engineer.

Hogan, a world leader in developmental biology and stem cell research, is by training a developmental biologist whose research with mouse embryos is designed to lead to a better understanding of the genetic origins of birth defects.

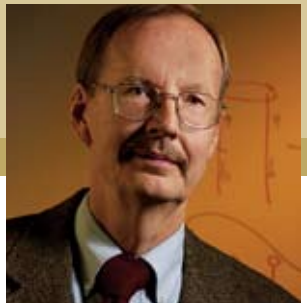
The goal of her research is to understand the molecular, cellular and genetic basis of organogenesis, the process by which complex organs like the lung, eye, kidney, and axial skeleton develop from small embryonic rudiments of undifferentiated cells. Her research has implications for the repair and regeneration of damaged tissues.

Victor J. Dzau, MD, chancellor for health affairs, has been selected as a 2005 recipient of the Ellis Island Medal of Honor.

The awards are given annually by the National Ethnic Coalition of Organizations to recognize distinguished Americans of various ethnic origins for their outstanding contributions to the United States. Dzau was cited for his achievements in medicine and his efforts to address global health issues and inequalities.

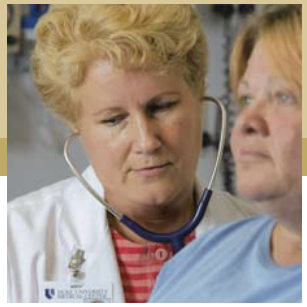
Dzau was also selected this year to receive the 28th annual Golden Door Award by the International Institute of Boston (IIB). The award is presented to a naturalized citizen who has risen to become a leader in their field.

Dzau was born in Shanghai, China and spent his formative years in Hong Kong, where he first developed an interest in medicine. A physician-scientist specializing in cardiovascular disease, he earned his undergraduate and medical degrees at McGill University in Montreal and over the years rose through the ranks of academic medicine, serving in leadership roles at Stanford and Harvard before assuming his current posts at Duke in 2004.



Thomas Petes, PhD, and **Huntington Willard, PhD,** were inducted into the American Academy of Arts & Sciences in May.

Hai Yan, MD, PhD, received the Peter A. Steck Memorial Award for his research in the field of neuro-oncology.



Julie Barroso, PhD, received the 2005 President's Award from the Association of Nurses in AIDS Care.

Thomas Petes, PhD, chair of molecular genetics and microbiology, and **Huntington Willard, PhD**, vice chancellor for genome sciences and director of the Institute for Genome Sciences and Policy, were inducted into the American Academy of Arts and Sciences in October. Fellows are elected "because of their efforts to advance science or its applications that are deemed scientifically or socially distinguished," according to the Academy.

The AAAS praised Willard for his work on identifying functional elements in the human centromere that led to the construction of the first human artificial chromosomes.

Willard came to Duke in 2002 to lead the Institute for Genome Sciences and Policy. In addition to continuing his research on the X sex chromosome, Willard has guided the institute in developing research in genome science and its applications across a broad spectrum of ethical, legal, and policy issues.

Petes, who came to Duke in 2004, was honored for his contributions to many areas related to genome stability, using baker's yeast as a model. For example, his research determined that yeast cells without certain DNA mismatch repair enzymes display genetic instabilities also present in hereditary human colorectal cancer cells. He joined the Duke faculty as chair of molecular genetics and microbiology in 2004.

Herbert Fuchs, MD, PhD, **Pedro Weisleder, MD, PhD**, and **Michael Skinner, MD**, all of Duke's Department of Pediatrics, were invited to speak at the 2005 International Shanghai Pediatrics Forum held in Shanghai, China. Fuchs, chief of pediatric neurosurgery, moderated a session on "Diagnosis and Treatment of Pediatric Brain Tumors;" Weisleder, clinical director of pediatric neurology, moderated a session on "Diagnosis and Treatment of the First Unprovoked Seizure in Children;" and Skinner, chief of general surgery, moderated a session on "Diagnosis and Treatment of Pediatric Thyroid Cancer." The forum, organized by the Children's Hospital of Fudan University, invites "prestigious pediatricians and scientists from China and abroad to present their latest clinical investigations and laboratory advances" in the field of pediatrics.

Larry B. Goldstein, MD, director of Duke's Center for Cerebrovascular Disease and the Duke Stroke Center, received the American Heart Association's (AHA) 2005 Volunteer Advocate of the Year award for his dedication to advocating for stroke research and programs and his efforts to improve treatment for stroke victims, both nationally and in the region. This award is the highest advocacy award given annually by the AHA.

Shahnaz Sultan, MD, a faculty associate in the Department of Medicine, won the American College of Gastroenterology's (ACG) Junior Faculty Development Grant Award. Sultan will use the $150,000 award to support clinical research work focused on critical areas in gastrointestinal (GI) disease, GI practice, and colonoscopy. Through her research, Sultan will examine how health literacy influences patient adherence to colonoscopy.

Hai Yan, MD, PhD, assistant professor of pathology and principal investigator of the molecular oncogenomic lab at the Duke Comprehensive Cancer Center, has received the 2005 Peter A. Steck Memorial Award. Sponsored by the Pediatric Brain Tumor Foundation, the national award recognizes one young investigator in the field of neuro-oncology each year. Yan was awarded for his research in characterizing the molecular genetic basis of medulloblastoma, which has led to his identification of a critical neuro-developmental gene involved in tumor progression.

Michael R. Zalutsky, PhD, professor of radiology and biomedical engineering, received the 2005 Society of Nuclear Medicine's (SNM) Berson-Yalow Award. The award is given to the investigator who has submitted the most original scientific abstracts and made the most significant contributions to basic or clinical radioassay. Zalutsky and his team were specifically commended on their work in targeting radionuclide therapy for cancer applications.

Julie Barroso, PhD, an associate professor in the School of Nursing, received the 2005 President's Award from the Association of Nurses in AIDS Care. The award is given to the ANAC member who has provided exemplary leadership and service in fulfillment of the association's mission and strategic plan.

H. Kim Lyerly, MD, director of the Duke Comprehensive Cancer Center, has been elected chairman of the American Society of Clinical Oncology's Grant Selection Committee effective June 2006. In 2005, the society awarded 12 career development awards and 45 young investigator awards, totaling more than $3.6 million in funding.

ANESTHESIOLOGY

Solomon Aronson, MD
919-681-2085
Particular Clinical Interests and Skills: Perioperative transesophageal echocardiography, coagulation, perioperative hypertension risk assessment
Faculty Rank: Professor
Division: Anesthesiology
MD Degree: MD, Medical College of Wisconsin, 1983
Residency: Anesthesiology, University of Texas Medical Branch, 1986
Fellowship: Cardio & Vascular Anesthesia, Texas Heart Institute, 1987

David L. McDonagh, MD
919-681-4698
Particular Clinical Interests and Skills: Neuroanesthesia, general anesthesia, neurocritical care, surgical critical care
Faculty Rank: Assistant Clinical Professor
Division: Anesthesiology
MD Degree: MD, Georgetown University, Washington, DC, 1998
Residency: Neurology, Duke University Medical Center, North Carolina, 2005
Anesthesiology, Duke University Medical Center, North Carolina, 2005
Fellowship: Neuroanesthesia and Neurocritical Care, Duke University Medical Center, North Carolina, 2005

Abigail H. Melnick, MD
919-681-6535
Particular Clinical Interests and Skills: Obstetric anesthesia and analgesia
Faculty Rank: Assistant Clinical Professor
Division: Anesthesiology
MD Degree: MD, Mount Sinai School of Medicine, New York, 2000
Residency: Anesthesiology, Duke University Medical Center, North Carolina, 2000-2004
Fellowship: Obstetric Anesthesia, Duke University Medical Center, 2004-2005

Winston C. V. Parris, MD
919-681-3157
Particular Clinical Interests and Skills: Chronic low back pain, spinal stenosis, degenerative disc disease, cancer pain management, role of substance P and other neuropeptides in the pathogenesis of pain, genomics of pain patients
Faculty Rank: Professor
Division: Anesthesiology
MD Degree: MD, University of the West Indies, Jamaica, 1968
Residency: Vanderbilt University Medical Center, Tennessee, 1977
Emory University, Georgia, 1982
Other: Diploma in Anesthetics, University of the West Indies, Jamaica, 1970

Lesco L. Rogers, MD
919-684-6736
Particular Clinical Interests and Skills: Management of chronic pain syndromes with special interest in spine pain and treatment of refractory head pain syndromes
Faculty Rank: Assistant Clinical Professor
Division: Anesthesiology
MD Degree: MD, Dartmouth College, New Hampshire, 1990
Residency: Anesthesiology, University of Medicine and Dentistry of New Jersey, 1995
Fellowship: Pain Management, Georgetown University Hospital, Washington, DC

COMMUNITY & FAMILY MEDICINE

Brian J. Caveney, MD, JD, MPH
919-286-3232
Particular Clinical Interests and Skills: Consultations on occupational health and wellness issues including health promotion, workers' compensation, disability, fitness for duty, independent medical examinations, and other corporate health strategies
Faculty Rank: Clinical Associate
Division: Occupational and Environmental Medicine
MD Degree: MD, West Virginia School of Medicine, 2002
Residency: Internal Medicine, UNC Hospitals, North Carolina, 2002-2003
Occupational and Environmental Medicine, Duke University
Occupational and Environmental Medicine, Duke University Medical Center, North Carolina, 2003-2005
Other: JD, West Virginia University College of Law, 2001
MPH, Health Policy and Administration, UNC School of Public Health, North Carolina, 2004

Tanika L. Day, MD
919-684-6721
Particular Clinical Interests and Skills: General family medicine and adolescent health
Faculty Rank: Clinical Associate
Division: Family Medicine
MD Degree: MD, University of Maryland, School of Medicine, 2000
Residency: Family Medicine, Duke University Medical Center, North Carolina, 2004
Fellowship: Faculty Development, Duke University Medical Center, North Carolina, 2005

Brian H. Halstater, MD
919-684-6721
Particular Clinical Interests and Skills: Full spectrum family medicine
Faculty Rank: Assistant Clinical Professor
Division: Family Medicine
MD Degree: MD, University of Medicine & Dentistry of New Jersey–Robert Wood Johnson Medical School, 1995
Residency: Family Medicine, UCLA, 1998

DUKE UNIVERSITY AFFILIATED PHYSICIANS

Chanhthevy S. Chai, MD
919-383-4355
Particular Clinical Interests and Skills: Urgent and family care to patients of all ages
Faculty Rank: Consulting Associate
Division: Duke Urgent Care
MD Degree: MD, University of North Carolina at Chapel Hill School of Medicine, 2000
Residency: Family Practice, University of North Carolina at Chapel Hill, 2000-2003

Martin C. Clowse, MD
919-544-6644
Particular Clinical Interests and Skills: Primary care for adults, age 18 and older
Faculty Rank: Consulting Associate
Division: Durham Medical Center
MD Degree: MD, Duke University School of Medicine, North Carolina, 1996
Residency: Internal Medicine, Vanderbilt University Medical Center, Tennessee, 1996-1999

Anne K. Glover, MD
919-484-8345
Particular Clinical Interests and Skills: Adult and pediatric medicine, special interest in diabetes management, hypertension and hyperlipidemia
Faculty Rank: Consulting Associate
Division: Duke Medicine at Brier Creek
MD Degree: West Virginia University School of Medicine, 1997
Residency: Internal Medicine, Akron General Medical Center, Ohio, 2001
Pediatrics, Children's Medical Center of Akron, Ohio, 2001

Hope D. Hall-Wilson, MD
252-492-3152
Particular Clinical Interests and Skills: All aspects of family medicine with an emphasis on prevention and early detection of disease
Faculty Rank: Consulting Associate
Division: Henderson Family Medicine
MD Degree: MD, Howard University College of Medicine, Washington, DC, 1990
Residency: Family Practice, St. Francis Hospital, Delaware, 1993

MEDICINE

Latonja M. Ivery, MD
919-693-3972
Particular Clinical Interests and Skills: Women's health issues and adolescent medicine
Faculty Rank: Consulting Associate
Division: Oxford Family Physicians
MD Degree: MD, UNC-Chapel Hill School of Medicine, North Carolina, 1996
Residency: Family Practice, Franklin Square Hospital, Maryland, 1999

Matthew D. Mathias, MD
919-572-2000
Particular Clinical Interests and Skills: Provide care for patients of all ages with interest in international adoption medicine
Faculty Rank: Consulting Associate
Division: Triangle Family Practice
MD Degree: Thomas Jefferson Medical University, Pennsylvania, 1996
Residency: University of Pittsburgh Medical Center, Saint Margaret's Hospital, Pennsylvania, 1999

Harvey Miranda, MD
919-383-4355
Particular Clinical Interests and Skills: Urgent care
Faculty Rank: Consulting Associate
Division: Duke Urgent Care
MD Degree: MD, University of North Carolina at Chapel Hill, 2002
Residency: Family Medicine, University of North Carolina at Chapel Hill, 2005
Other: MA, Science Education, University of North Carolina at Chapel Hill, 1994

John L. Morris, MD
919-383-4355
Particular Clinical Interests and Skills: Urgent care
Faculty Rank: Consulting Associate
Division: Duke Urgent Care
MD Degree: MD, Ohio State University, 1982-1986
Residency: Family Medicine, Good Samaritan Medical Center, Arizona, 1986-1989

Johanna C. Bendell, MD
919-668-6688
Particular Clinical Interests and Skills: Gastrointestinal oncology
Faculty Rank: Assistant Professor
Division: Medical Oncology and Transplantation
MD Degree: MD, University of Chicago, Illinois, 1998
Residency: Internal Medicine, Brigham and Women's Hospital, Massachusetts, 2001
Fellowship: Adult Oncology, Dana Farber Cancer Institute, Massachusetts, 2003

Paul F. Burke, MD
919-681-1607
Particular Clinical Interests and Skills: General neurology, neurological complications of systemic disease, motor neuron disease, EMG guided chemodenervation for dystonia and spasticity
Faculty Rank: Associate Professor
Division: Neurology
MD Degree: MD, Rush Medical College, Illinois, 2000
Residency: Neurology, Duke University Medical Center, North Carolina, 2004
Fellowship: Clinical Neurophysiology, Duke University Medical Center, North Carolina, 2005

Kirtine Lee, MD
919-220-4000
Particular Clinical Interests and Skills: General newborn, pediatric, and adolescent health
Faculty Rank: Consulting Associate
Division: Durham Pediatrics
MD Degree: MD, Stanford University School of Medicine, California, 2002
Residency: Pediatrics, University of North Carolina at Chapel Hill, 2005

Lawrence M. Sichel, MD
919-845-2125
Particular Clinical Interests and Skills: General internal medicine
Faculty Rank: Consulting Associate
Division: Harps Mill Internal Medicine
MD Degree: MD, University of Michigan, 1987
Residency: Internal Medicine, Rush Presbyterian-St. Luke's Medical Center, Illinois, 1987-1990

David F. Boerner, MD
919-571-9247
Particular Clinical Interests and Skills: Disease management in asthma and COPD, diagnostic bronchoscopy, pulmonary function testing
Faculty Rank: Consulting Associate
Division: Pulmonary, Allergy and Critical Care
MD Degree: MD, Pennsylvania State University College of Medicine, 1976
Residency: Medicine, Duke University Medical Center, North Carolina, 1976-1979
Fellowship: Pulmonary Medicine, Duke University Medical Center, North Carolina, 1979-1981
Other: MBA, Fuqua School of Business, Duke University, North Carolina, 2000

Nicole Calakos, MD, PhD
919-668-2493
Particular Clinical Interests and Skills: Wide range of patients with movement disorders, research interests include dystonia and Parkinson's disease
Faculty Rank: Assistant Professor
Division: Neurology
MD Degree: MD, Stanford University, California, 1996
Residency: Neurology, University of California - San Francisco, 1996-2000
Fellowship: Research Fellowship, Stanford University, California, 2000-2005
Other: PhD, Neurosciences, Stanford University, California, 1995

ON THE SPOT

Q: What are some emerging issues in adolescent medicine?

A: "The single most significant health issue is that of obesity and insulin resistance in adolescents and pre-adolescents, resulting in rising numbers of children with type 2 diabetes, hypercholesterolemia, and hypertension. An estimated 15 percent of U.S. teens are overweight, as defined by a body mass index (BMI) greater than the 95th percentile for age. I personally believe the figure is significantly higher.

Lifestyle changes required to counteract obesity are incredibly difficult, but as public awareness has grown, so have efforts toward obesity prevention. Examples include early utilization of BMI and schools eliminating junk food and soda machines. The best chance at prevention will involve a committed effort and consistent message from schools, families, and health care providers."

—Kirtine Lee, MD

Erica J. Caveney, MD
919-668-5314
Particular Clinical Interests and Skills: Endocrinology
Faculty Rank: Associate
Division: Endocrinology, Metabolism, and Nutrition
MD Degree: MD, West Virginia University, 1998
Residency: Internal Medicine, West Virginia University, 2001
Fellowship: Endocrinology, UNC Hospitals, North Carolina, 2005

Michael J. Cicale, MD
919-668-0381
Particular Clinical Interests and Skills: Asthma, COPD, airway disorders, general pulmonary medicine
Faculty Rank: Associate Professor
Division: Pulmonary, Allergy and Critical Care
MD Degree: MD, Georgetown University, Washington, DC, 1979
Residency: Internal Medicine, University of Florida, 1979-1982
Fellowship: Pulmonary, University of Florida, 1982-1984

Megan E.B. Clowse, MD, MPH
919-668-1466
Particular Clinical Interests and Skills: Pregnancy in women with rheumatic disease, lupus, antiphospholipid syndrome, inflammatory arthritis, and vasculitis
Faculty Rank: Assistant Professor
Division: Rheumatology and Immunology
MD Degree: MD, Vanderbilt Medical School, Tennessee, 1999
Residency: Internal Medicine, Johns Hopkins Hospital, Maryland, 1999-2002
Fellowship: Rheumatology, Johns Hopkins Hospital, Maryland, 2002-2005
Other: Masters in Public Health (MPH), UCLA, 1993-1994

Christopher E. Cox, MD, MPH
919-668-0380
Particular Clinical Interests and Skills: Critical care, long-term outcomes of critical care, mechanical ventilation, palliative care, public health impact of critical care
Faculty Rank: Assistant Professor
Division: Pulmonary, Allergy and Critical Care
MD Degree: MD, Medical University of South Carolina, 1997
Residency: Internal Medicine, New York University, 1997-2000
Fellowship: Clinical Research, University of North Carolina, 2000-2002
Pulmonary and Critical Care, Duke University Medical Center, North Carolina, 2002-2005
Other: MPH, University of North Carolina, 2002

Nancy V. Cross, MD
919-571-9247
Particular Clinical Interests and Skills: General internal medicine with emphasis on preventative care, infectious disease and immunology
Faculty Rank: Consulting Associate
Division: General Internal Medicine
MD Degree: MD, University of South Carolina, 1994
Residency: Internal Medicine, Riverside Methodist Hospital, Ohio, 1994-1997
Other: MS, Microbiology, University of Missouri–St. Louis, 1986

Annick Desjardins, MD
919-684-5301
Particular Clinical Interests and Skills: Treatment of patients affected with primary brain tumors, clinical research focus on providing innovative and aggressive therapies to adults with primary brain tumors
Faculty Rank: Associate
Division: Neurology
MD Degree: MD, Universite de Sherbrooke, Canada, 1998
Residency: Neurology, Universite de Sherbrooke, Canada, 2003
Fellowship: Neuro-Oncology, Duke University Medical Center, North Carolina, 2005

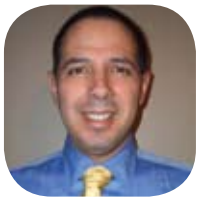
Katja I. Elbert-Avila, MD
919-660-7568
Particular Clinical Interests and Skills: Geriatric assessment/medicine, memory impairment in elderly, end of life care/palliative care
Faculty Rank: Associate
Division: Geriatric Medicine
MD Degree: MD, University of Michigan–Ann Arbor, 1999
Residency: Internal Medicine, Duke University Medical Center, North Carolina, 1999-2002
Fellowship: Geriatric Medicine, Duke University Medical Center, North Carolina, 2002-2005

Radha Goel Kachhy, MD
919-862-5100
Particular Clinical Interests and Skills: Clinical consultative cardiology, cardiac imaging (including nuclear cardiology, echocardiography, stress echo and transesophageal echocardiography), carotid ultrasound, women's heart disease, preoperative risk assessment, valvular heart disease, diagnostic cardiac catheterization
Faculty Rank: Consulting Associate
Division: Cardiology
MD Degree: MD, Baylor College of Medicine, Texas, 1999
Residency: Internal Medicine, Duke University Medical Center, North Carolina, 1999-2002
Fellowship: Cardiology, University of Maryland Medical Center, 2002-2005

Douglas G. Kelling, MD
704-783-1307
Particular Clinical Interests and Skills: Chronic obstructive lung disease (COPD), asthma, occupational lung diseases
Faculty Rank: Assistant Professor
Division: Pulmonary, Allergy and Critical Care
MD Degree: MD, Harvard Medical School, Massachusetts, 1972
Residency: Internal Medicine, Duke University Medical Center, North Carolina, 1972-1976
Fellowship: Pulmonary Medicine, Duke University Medical Center, North Carolina, 1975-1976; 1984

Ruediger W. Lehrich, MD
919-660-6865
Particular Clinical Interests and Skills: General nephrology, consultative nephrology, hemodialysis
Faculty Rank: Associate
Division: Nephrology
MD Degree: MD, Freie Universitaet, Berlin, Germany, 1995
Residency: Internal Medicine, Humboldt University, Berlin, Germany, 1995-1998
Internal Medicine, Duke University Medical Center, North Carolina, 2000-2003
Fellowship: Research Fellow, Cellular Biochemistry, Memorial Sloan-Kettering Cancer Center, New York, 1998-2000
Nephrology Clinical Fellowship, Duke University Medical Center, North Carolina, 2003-2005

Karen H. Miller, MD
919-571-9247
Particular Clinical Interests and Skills: General internal medicine
Faculty Rank: Consulting Associate
Division: General Internal Medicine
MD Degree: MD, Duke University School of Medicine, North Carolina, 1982
Residency: Internal Medicine, Tulane University, Louisiana, 1983-1987



Jorge V. Obando, MD
919-684-1817
Particular Clinical Interests and Skills: Gastroenterology
Faculty Rank: Assistant Professor
Division: Gastroenterology
MD Degree: MD, Cayetano Heredia University, Peru, 1993
Residency: Presbyterian University of Pennsylvania, 1993-1994
University of Massachusetts Medical Center, 1994-1997
Fellowship: Gastroenterology Fellowship, University of Massachusetts Medical Center
Duke University Medical Center, 2000-2001

Bruce T. Peyser, MD
919-620-5323
Particular Clinical Interests and Skills: Help patients focus on maintaining and improving their health by way of preventative screening for common medical problems such as cardiovascular disease and malignancy, exercise and nutritional counseling
Faculty Rank: Associate Clinical Professor
Division: General Internal Medicine
MD Degree: MD, Cornell Medical School, New York, 1983
Residency: Internal Medicine, Washington Hospital Center, Washington, DC, 1983-1984
Internal Medicine, Primary Care Program, University of Rochester, 1984-1987

Mark A. Powers, MD
919-220-5118
Particular Clinical Interests and Skills: Asthma, allergic rhinitis, COPD, sarcoidosis, lung cancer evaluation, critical care medicine, general pulmonary practice
Faculty Rank: Associate Clinical Professor
Division: Pulmonary, Allergy and Critical Care
MD Degree: MD, Dartmouth Medical School, New Hampshire, 1977
Residency: Internal Medicine, University of North Carolina, 1977-1980
Fellowship: Pulmonary and Critical Care, University of North Carolina, 1981-1983

Stephen E. Robinson, MD
919-862-5100
Particular Clinical Interests and Skills: Clinical and consultative cardiology, echocardiography (including stress echo and transesophageal), nuclear cardiology, diagnostic cardiac and peripheral angiography, pacemaker implantation
Faculty Rank: Consulting Associate
Division: Cardiology
MD Degree: MD, Wake Forest University School of Medicine, North Carolina, 1999
Residency: Internal Medicine, Wake Forest University, Baptist Medical Center, North Carolina, 1999-2002
Fellowship: Cardiovascular Diseases, Saint Louis University Health Sciences Center, Missouri, 2002-2005

Sally J. York, MD, PhD
919-681-6178
Particular Clinical Interests and Skills: Lung cancer patients, both non-small cell and small cell, supportive care for patients
Faculty Rank: Assistant Professor
Division: Medical Oncology and Transplantation
MD Degree: MD, Washington University, Missouri, 1996
Residency: Duke University Medical Center, North Carolina, 1996-1999
Fellowship: Hematology–Medical Oncology, Duke University Medical Center, North Carolina, 1999-2001
Other: PhD, Molecular and Cellular Biology, Washington University, Missouri, 1996

OB/GYN

Angel Nieves, MD, PhD
919-668-4528
Particular Clinical Interests and Skills: General obstetrics, gynecology, and women's health; gynecologic surgery including operative laparoscopy and hysteroscopy; endometrial ablation; disorders of menstruation; management of perimenopausal and menopausal symptoms; contraception
Faculty Rank: Clinical Associate
Division: General Obstetrics and Gynecology
MD Degree: MD, New Jersey Medical School–UMDMJ, 2001
Residency: Obstetrics and Gynecology, Duke University Medical Center, North Carolina, 2005

Clayton Brennan Fitzpatrick, MD
919-681-5220
Particular Clinical Interests and Skills: Maternal-fetal medicine
Faculty Rank: Clinical Associate
Division: Maternal-Fetal Medicine
MD Degree: MD, University of Louisville, Kentucky, 2001
Residency: Indiana University School of Medicine, 2005
Fellowship: Maternal-Fetal Medicine, Duke University Medical Center, North Carolina, 2005-2008

OPHTHALMOLOGY

S. Jill Bryant, OD
919-684-8445
Particular Clinical Interests and Skills: Management of general ophthalmic problems, contact lens fittings, and urgent eye care
Faculty Rank: Clinical Associate
Division: Comprehensive Ophthalmology Service
Degree: OD, Nova Southeastern University College of Optometry, Florida, 2004
Residency: Primary Care, W.J.B. Dorn Veterans Affairs Medical Center, South Carolina, 2005

Scott W. Cousins, MD
919-684-3090
Particular Clinical Interests and Skills: Diagnosis, treatment and research involving diseases of the macula, especially AMD, diabetic retinopathy, and retinal vascular disease
Faculty Rank: Professor
Division: Vitreoretinal Diseases and Surgery Service
MD Degree: Case Western Reserve University School of Medicine, Ohio, 1982
Residency: Washington University/Barnes Hospital, Missouri, 1983-1986
Chief Resident, Washington University, Missouri, 1987-1988
Fellowship: Vitreoretinal Fellow, Bascom Palmer Eye Institute, Florida, 1986-1987

Stuart J. McKinnon, MD, PhD
919-684-2975
Particular Clinical Interests and Skills: Diagnosis and treatment of glaucoma and cataract, laser and filtering procedures for glaucoma, complicated cataract surgery
Faculty Rank: Associate Professor
Division: Glaucoma Service
MD Degree: LSU Medical Center, Louisiana, 1990
Residency: Ophthalmology, LSU Eye Center, Louisiana, 1995
Fellowship: Glaucoma, Johns Hopkins School of Medicine, Maryland, 1996
Other: PhD, Physical Chemistry, University of New Orleans, Louisiana, 1990

Prithvi Mruthyunjaya, MD
919-684-8434
Particular Clinical Interests and Skills: Evaluation, diagnosis and management of patients with ocular cancers, including anterior segment and vascular tumors, uveal melanoma, retinoblastoma, and ocular metastases; expertise in ophthalmic ultrasound, ocular biopsy and multimodality treatments including tumor resection, chemotherapy and radiotherapy; diagnosis and surgical treatment of diabetic retinopathy, age-related macular degeneration (AMD), retinal vascular disease and complex retinal detachments
Faculty Rank: Assistant Professor
Division: Vitreoretinal Diseases and Surgery Service
MD Degree: MD, Albany Medical College of Union College, New York, 1996
Residency: Internal Medicine/Primary Care, University of Rochester/Strong Memorial Hospital, New York, 1996-1997
Ophthalmology, Duke University Eye Center, North Carolina, 1997-2000
Fellowship: Clinical and Research Fellowship, Vitreoretinal Surgery, Duke University Eye Center, North Carolina, 2001-2004
Clinical and Research Fellowship, Ocular Oncology, Moorfields Eye Hospital and St. Bartholomew's Trust Hospital, London, United Kingdom, 2004-2005

PATHOLOGY

Ivan J. Suner, MD
919-668-1876
Particular Clinical Interests and Skills: Vitreoretinal diseases
Faculty Rank: Associate Professor
Division: Vitreoretinal Diseases and Surgery Service
MD Degree: MD, Yale University School of Medicine, Connecticut, 1992
Residency: Ophthalmology, Bascom Palmer Eye Institute–University of Miami, Florida, 1996
Fellowship: Retina, Bascom Palmer Eye Institute–University of Miami, Florida, 2002

David K. Wallace, MD
919-684-8417
Particular Clinical Interests and Skills: Pediatric ophthalmology, adult strabismus, particular interest in treating strabismus (misalignment of the eyes), childhood cataracts, and retinopathy of prematurity; manages patients with other pediatric eye problems such as amblyopia, nasolacrimal duct obstruction, and refractive errors
Faculty Rank: Associate Professor
Division: Pediatric Ophthalmology and Strabismus Service
MD Degree: Indiana University School of Medicine, 1990
Residency: Resident, Cullen Eye Institute, Texas, 1991-1993
Chief Resident, Baylor College of Medicine, Texas, 1993-1994
Fellowship: Indiana University Medical Center, 1994-1995

Carol A. Filomena, MD
919-862-5827
Particular Clinical Interests and Skills: Cytopathology, fine needle aspiration, surgical pathology, clinical pathology
Faculty Rank: Assistant Clinical Professor
Division: Pathology
MD Degree: MD, Hahnemann University, Pennsylvania, 1984
Residency: Combined Anatomic and Clinical Pathology Residency, Jefferson Medical College, Thomas Jefferson University, Pennsylvania, 1984-1988
Fellowship: Chemical Pathology Fellowship, Jefferson Medical College, Thomas Jefferson University, Pennsylvania, 1988-1989
Cytopathology Fellowship, Jefferson Medical College, Thomas Jefferson University, Pennsylvania, 1989-1990

Joseph Geradts, MD, MA
919-668-5670
Particular Clinical Interests and Skills: Surgical pathology, oncologic pathology, breast pathology including prognostic and predictive markers
Faculty Rank: Professor
Division: Pathology
MD Degree: MD, University of Chicago, Illinois, 1987
Residency: Anatomic Pathology, University of California at San Francisco, 1987-1989
Fellowship: Surgical Pathology, Stanford University Medical Center, California, 1989-1990
Other: MA (Endocrinology), University of California at Berkeley, 1984

Alejandro Peralta Soler, MD, PhD
919-681-6462
Particular Clinical Interests and Skills: Dermatopathology, anatomic pathology
Faculty Rank: Assistant Professor
Division: Pathology
MD Degree: MD, Universidad Nacional De Cordoba, Argentina, 1979
Residency: Anatomic Pathology, SUNY Downstate Medical Center, New York, 2000-2003
Fellowship: Dermatopathology, Universidad Nacional De Cordoba, Argentina, 1986
Other: PhD, Universidad Nacional De Cordoba, Argentina, 1986

PEDIATRICS

Debra L. Best, MD
919-620-5333
Particular Clinical Interests and Skills: General pediatrics
Faculty Rank: Clinical Associate
Division: Children's Primary Care
MD Degree: MD, Northwestern University Medical School, Illinois, 2001
Residency: Pediatrics, Duke University Medical Center, North Carolina, 2001-2004

April O. Buchanan, MD
919-681-6024
Particular Clinical Interests and Skills: General pediatrics and neonatology
Faculty Rank: Clinical Associate
Division: Neonatal-Perinatal Medicine
MD Degree: MD, Medical University of South Carolina, 1999
Residency: Pediatrics, Vanderbilt University Medical Center, Tennessee, 1999-2002

John W. Chung, MD
919-684-3401
Particular Clinical Interests and Skills: Sarcomas and developing therapies to improve the long-term survival of patients with these diseases, interest in hemangiomas and vascular malformations
Faculty Rank: Associate
Division: Hematology-Oncology
MD Degree: MD, Ohio State University, 1998
Residency: Pediatrics, St. Christopher's Hospital for Children, Pennsylvania, 2001
Fellowship: Pediatric Hematology/Oncology, Memorial Sloan-Kettering Cancer Center, New York, 2005

Katharine A. Kevill, MD
919-681-3364
Particular Clinical Interests and Skills: Pulmonary medicine
Faculty Rank: Associate
Division: Pulmonary Medicine
MD Degree: MD, Duke University School of Medicine, North Carolina, 1994
Residency: Pediatrics, The New York Hospital/Cornell Medical Center, 1995-1998
Fellowship: Post-Doctoral Fellow, Pediatric Respiratory Medicine, Yale University School of Medicine, Connecticut, 2002-2005

Fawn Leigh, MD
919-684-3219
Particular Clinical Interests and Skills: Seizure and neurocutaneous disorders in particular neurofibromatosis and tuberous sclerosis
Faculty Rank: Associate
Division: Neurology
MD Degree: MD, University of Chicago, Illinois, 1999
Residency: General Pediatrics, University of Chicago, Illinois, 2002
Fellowship: Child Neurology, University of Chicago, Illinois, 2005

Corinne M. Linardic, MD, PhD
919-684-3401
Particular Clinical Interests and Skills: Pediatric hematology-oncology with emphasis on caring for children, adolescents, and young adults with sarcomas
Faculty Rank: Assistant Professor
Division: Hematology-Oncology
MD Degree: MD, Duke University School of Medicine, North Carolina, 1995
Residency: Pediatrics, Children's Hospital of Philadelphia, Pennsylvania, 1995-1998
Fellowship: Pediatric Hematology-Oncology, Children's Hospital of Philadelphia, Pennsylvania, 1998-1999
Pediatric Hematology-Oncology, Duke University Medical Center, North Carolina, 1999-2001
Other: PhD, Cell Biology, Duke University, 1993

Vaishali S. Mankad, MD
919-684-9914
Particular Clinical Interests and Skills: Rhinitis, asthma, food allergy, and anaphylaxis
Faculty Rank: Clinical Associate
Division: Allergy and Immunology
MD Degree: University of Illinois College of Medicine, 1998
Residency: Pediatrics, Duke University Medical Center, North Carolina, 1998-2001
Fellowship: Allergy-Immunology, Duke University Medical Center, North Carolina, 2001-2003

George A. Manousos, MD
919-470-4230
Particular Clinical Interests and Skills: Pediatric hospitalist medicine with current focus in neonatal medicine; medical student/house officer education
Faculty Rank: Clinical Associate
Division: Neonatal-Perinatal Medicine
MD Degree: MD, Duke University School of Medicine, North Carolina, 2002
Residency: Pediatrics, Duke University School of Medicine, North Carolina, 2005

Stephen G. Miller, MD
910-323-5940
Particular Clinical Interests and Skills: General pediatric cardiology, echocardiography, fetal cardiology, fetal counseling, transesophageal echo in congenital heart disease, adult congenital heart disease
Faculty Rank: Clinical Associate
Division: Cardiology
MD Degree: Pennsylvania State University College of Medicine, 1998
Residency: Pediatrics, The Cleveland Clinic Foundation, 1998-2002
Fellowship: Pediatric Cardiology, University of California, San Francisco, 2002-2005

Esi Morgan DeWitt, MD
919-684-6575
Particular Clinical Interests and Skills: Childhood rheumatic diseases, patient-reported outcome measures (quality of life), health economics, drug safety
Faculty Rank: Associate
Division: Rheumatology
MD Degree: MD, Washington University School of Medicine, Missouri, 1999
Residency: Pediatrics, Children's Hospital of Philadelphia, Pennsylvania, 1999-2002
Fellowship: Pediatric Rheumatology, Children's Hospital of Philadelphia, Pennsylvania, 2002-2005
Other: MSCE, University of Pennsylvania, 2005

Hugo A. Navarro, MD
336-538-7378
Particular Clinical Interests and Skills: Care of the critically ill neonate with special interest in respiratory disorders
Faculty Rank: Assistant Clinical Professor
Division: Neonatal-Perinatal Medicine
MD Degree: MD, University of Panama, 1986
Residency: Pediatrics, Hospital Fundacion Jimenez Diaz, Spain, 1992
Pediatrics, Jackson Memorial Hospital, Florida, 1995
Fellowship: Neonatology, Jackson Memorial Hospital, Florida, 1997

Uptal D. Patel, MD
919-668-8008
Particular Clinical Interests and Skills: Adult and pediatric nephrology, cardiovascular risk reduction and Other management strategies for patients with chronic kidney disease, transitional care for children and adolescents with kidney disease
Faculty Rank: Assistant Professor
Division: Nephrology
MD Degree: MD, University of California at San Francisco, 1997
Residency: Medicine and Pediatrics, University of Michigan, 1997-2001
Fellowship: Pediatric Nephrology, University of Michigan, 2001-2005
Adult Nephrology, University of Michigan, 2002-2005
Robert Wood Johnson Clinical Scholars Program, 2003-2005

Melissa S. Rayburg, MD
919-668-1100
Particular Clinical Interests and Skills: Blood and Marrow Transplantation
Faculty Rank: Clinical Associate
Division: Blood and Marrow Transplantation
MD Degree: MD, College of Human Medicine, Michigan, 2002
Residency: University of Texas Health Science Center–Christus Santa Rosa Children's Hospital

Joseph W. St. Geme, III, MD
919-681-4080
Particular Clinical Interests and Skills: Pediatric infectious diseases, antibiotic resistance, respiratory tract infections, central nervous system infections, tick-borne infections, vaccine development, microbial pathogenesis
Faculty Rank: Professor
Division: Infectious Diseases
MD Degree: MD, Harvard Medical School, Massachusetts, 1984
Residency: Pediatrics, Children's Hospital of Philadelphia, 1984-1988
Fellowship: Postdoctoral Fellow, Department of Microbiology and Immunology, Stanford University, California, 1988-1992
Postdoctoral Fellow, Department of Pediatrics, Division of Infectious Diseases, Stanford University, California, 1991-1992

Courtney D. Thornburg, MD
919-684-3401
Particular Clinical Interests and Skills: Bleeding and thrombotic disorders in children, hematologic disorders in children
Faculty Rank: Assistant Professor
Division: Hematology Oncology
MD Degree: MD, Duke University School of Medicine, NC, 1998
Residency: Pediatrics, Duke University Medical Center, NC, 1998-2001
Fellowship: Pediatric Hematology/Oncology, University of Michigan, 2001-2004
National Hemophilia Foundation Clinical Fellowship in Hemostasis and Thrombosis, University of Michigan, 2003-2005
Other: MS, Clinical Research Design and Statistical Analysis, University of Michigan, 2005

PSYCHIATRY

Kelly K. Anthony, PhD
919-416-2444
Particular Clinical Interests and Skills: Clinical child/pediatric psychology; psychological assessment of learning, developmental, and/or behavioral problems secondary to childhood chronic illness; assessment of pain in children and adolescents; child and family therapy
Faculty Rank: Clinical Associate
Division: Medical Psychology
PhD Degree: PhD, University of North Carolina at Chapel Hill, 2004
Residency:
Clinical Child Psychology, Duke University Medical Center, North Carolina, 2003-2004
Pediatric Psychology, Duke University Medical Center, North Carolina, 2004-2005

Alfiee M. Breland-Noble, PhD, MHS
919-416-2432
Particular Clinical Interests and Skills: Improving treatment engagement for psychiatric illness in people of color and adolescent depression prevention and intervention within a familial context
Faculty Rank: Assistant Professor
Division: Medical Psychology
Other: MA, Counseling, New York University, 1993
Counseling Psychology, Duke University Counseling and Psychological Services, North Carolina, 1997
MHS, Duke University School of Medicine, CRTP, North Carolina, 2006

James W. Carson, PhD
919-416-3407
Particular Clinical Interests and Skills: Specialize in the use of meditation-based skills, such as mindfulness training, for coping with chronic medical illness
Faculty Rank: Assistant Clinical Professor
Division: Medical Psychology
PhD Degree: PhD, Clinical Psychology, University of North Carolina at Chapel Hill, 2002

Helen L. Egger, MD
919-687-4686 ext 228
Particular Clinical Interests and Skills: Preschool mental health with primary focus on preschoolers (18 months to 6 years old) with anxiety disorders and mood disorders
Faculty Rank: Assistant Professor
Division: Child and Adolescent Psychiatry
MD Degree: MD, Yale School of Medicine, Connecticut, 1991
Residency: Internship, Georgetown University, Washington, DC, 1992-1993
Adult Psychiatry Residency, Duke University Medical Center, North Carolina, 1993-1996
Fellowship: Child Psychiatry Fellowship, Duke University Medical Center, North Carolina, 1996-1998
National Institute of Mental Health Post-Doctoral Research Fellowship, 1998-2000

Miriam H. Feliu, PhD
919-668-2835
Particular Clinical Interests and Skills: Chronic pain and clinical neuropsychology
Faculty Rank: Clinical Associate
Division: Medical Psychology
Other: Biofeedback Certification Institute of America, 1992
Master of Science, Mental Health, Carlos Albizu University, Florida, 1999
Licensed Mental Health Counselor, Florida, 2001
Chronic Pain and Biofeedback/Clinical Neuropsychology, Duke University Medical Center, North Carolina, 2002-2003
PhD Degree: Carlos Albizu University, 2004
Chronic Pain, Duke University Medical Center, North Carolina, 2004-2005

Harold W. Goforth, MD
919-681-1908
Particular Clinical Interests and Skills: Geriatric psychiatry, neurophysiology, consultation liaison psychiatry, ECT, dementia and delirium
Faculty Rank: Assistant Professor
Division: Geriatric Psychiatry
MD Degree: MD, Wright State University, Ohio, 1998
Residency: General Surgery, Northwestern University Hospitals, Illinois, 1999
Anatomic Pathology, University of Chicago Hospitals, Illinois, 2000
General Adult Psychiatry, Loyola University Medical Center, Illinois, 2004
Fellowship: Geriatric Psychiatry, Duke University Medical Center, North Carolina, 2005
Other: MA, The Ohio State University, 1994

Paolo Mannelli, MD
919-477-1216
Particular Clinical Interests and Skills: Addiction and comorbid disorders, dual diagnosis, and psychopharmacology
Faculty Rank: Associate Clinical Professor
Division: Biological Psychiatry
MD Degree: MD, Universita' Cattolica del Sacro Cuore, Rome, 1986
Residency: Psychiatry, Universita' Cattolica del Sacro Cuore, Rome, 1986-1990
Fellowship: Psychiatry and Addictions, University of California San Francisco, 1989-1990

RADIOLOGY

Phoebe S. Moore, PhD
919-416-2422
Particular Clinical Interests and Skills: Cognitive behavioral therapy for childhood anxiety and obsessive compulsive disorders, parent consultation and training for parents of anxious children
Faculty Rank: Assistant Clinical Professor
Division: Medical Psychology
PhD Degree: Clinical Psychology, UCLA, California, 2002
Residency: Internship, Clinical Psychology, Child and Family Guidance Center, California, 2000-2001
Fellowship: Post Doctoral Fellow, Stanford University Medical Center, Child Anxiety Disorders Clinic, California, 2002-2004

R. Lee Cothran, MD
919-684-7272
Particular Clinical Interests and Skills: Musculoskeletal radiology
Faculty Rank: Assistant Professor
Division: Musculoskeletal Radiology
MD Degree: MD, Duke University School of Medicine, North Carolina, 1995
Residency: Internal Medicine, North Carolina Baptist Hospital, 1995-1996
Radiology, Duke University Medical Center, North Carolina, 1996-2000
Fellowship: Musculoskeletal Radiology, Duke University Medical Center, North Carolina, 2000-2001

ON THE SPOT

Q: How does parent consultation and training affect the overall treatment of anxious children?

A: "Clinical trials have shown that adding parent consultation and training to individual cognitive behavior therapy (CBT) for anxious children can lead to enhanced outcomes. Certain families benefit especially from parent training, including families in which a parent has an anxiety disorder and families of girls with anxiety disorders.

Parent training models include educating the parents about the child's disorder and treatment, helping parents to support the treatment, teaching problem-solving skills, and sometimes training parents to manage their own anxiety. New models are being developed to help parents change particular patterns common in families of anxious children, like overprotection and parental modeling of anxious avoidance."

—Phoebe Moore, PhD

RADIATION ONCOLOGY

Chad M. Miller, MD
919-684-2711
Particular Clinical Interests and Skills: Abdominal imaging with CT, MRI, and ultrasound
Faculty Rank: Clinical Associate
Division: Abdominal Imaging
MD Degree: MD, Duke University School of Medicine, North Carolina, 1999
Residency: Internal Medicine, Stanford University Medical Center, California, 1999-2000
Diagnostic Radiology, Duke University Medical Center, North Carolina, 2000-2004
Fellowship: Abdominal Imaging, Duke University Medical Center, North Carolina, 2004-2005

Emily N. Vinson, MD
919-684-7883
Particular Clinical Interests and Skills: Musculoskeletal radiology, MR imaging, sports medicine imaging
Faculty Rank: Associate
Division: Musculoskeletal Radiology
MD Degree: MD, Duke University School of Medicine, North Carolina, 1999
Residency: Internal Medicine, Providence St. Vincent Medical Center, Oregon, 2000
Radiology, Duke University Medical Center, North Carolina, 2004
Fellowship: Musculoskeletal Radiology, Duke University Medical Center, North Carolina, 2005

Nicole A. Larrier, MD, MS
919-668-7342
Particular Clinical Interests and Skills: Pediatric oncology, sarcomas, thoracic malignancies, palliative care
Faculty Rank: Associate
Division: Radiation Oncology
MD Degree: MD, Johns Hopkins School of Medicine, Maryland, 1999
Residency: Radiation Oncology, Duke University Medical Center, North Carolina, 2000-2004
Other: MS, MIT, Massachusetts, 1995

Beth H. Lindsay, MD
252-436-1148
Particular Clinical Interests and Skills: Radiation oncology
Faculty Rank: Associate
Division: Radiation Oncology
MD Degree: MD, Medical College of Georgia, 1987
Residency: Radiation Oncology, Medical College of Georgia, 1991

Zeljko Vujaskovic, MD, PhD
919-681-1675
Particular Clinical Interests and Skills: Hyperthermia, clinical trials, combined modality therapy, radiation-induced normal tissue injury
Faculty Rank: Associate Clinical Professor
Division: Radiation Oncology
MD Degree: MD, University of Zagreb, Croatia, 1985
Residency: Medicine, Karlovac, Croatia, 1985-1986
Radiation Oncology, Zagreb, Croatia, 1986-1989
Fellowship: Oncology, University of Colorado Medical Center, 1989-1990
Radiation Biology, Colorado State University, 1990-1994
Other: PhD, Radiation Biology, Colorado State University, 1995

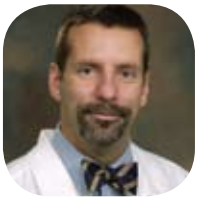
SURGERY

David Cory Adamson, MD, PhD, MPH
919-286-0411 ext. 6252
Particular Clinical Interests and Skills: General adult neurosurgery with special interests in primary and secondary brain tumors, skull base tumors, posterior fossa tumors, pituitary tumors; cerebrovascular disease including aneurysms and arteriovenous malformations
Faculty Rank: Assistant Professor
Division: Neurosurgery
MD Degree: MD, Johns Hopkins University, Maryland, 1998
Residency: Neurosurgery, Duke University Medical Center, North Carolina, 2005
Fellowship: Neuro-Oncology, Duke University Medical Center, North Carolina, 2005
Other: PhD, Neuroscience, Johns Hopkins University, Maryland, 1998
MPH, Johns Hopkins University, Maryland, 1999

Eric J. DeMaria, MD, FACS
919-681-3802
Particular Clinical Interests and Skills: Laparascopic surgery, bariatric and GI surgery
Faculty Rank: Professor
Division: General Surgery
MD Degree: MD, Boston University School of Medicine, Massachusetts, 1983
Residency: Surgery, Brown University, Rhode Island, 1983-1985, 1987-1990
Fellowship: Trauma, Brown University, Rhode Island, 1985-1987

Stephen J. Freedland, MD
919-684-2033
Particular Clinical Interests and Skills: Prostate cancer and prostate diseases, general urology
Faculty Rank: Assistant Professor
Division: Urology
MD Degree: MD, University of California, Davis, 1997
Residency: General Surgery, UCLA School of Medicine, California
Urology, UCLA School of Medicine, California, 2003
Fellowship: Urologic Oncology Fellowship, Johns Hopkins University School of Medicine, Maryland, 2003-2005

David C. Gordon, MD
919-684-5537
Particular Clinical Interests and Skills: Resident and medical student education
Faculty Rank: Assistant Clinical Professor
Division: Emergency Medicine
MD Degree: MD, Harvard Medical School, Massachusetts, 2001
Residency: Emergency Medicine, University of Cincinnati, Ohio, 2005

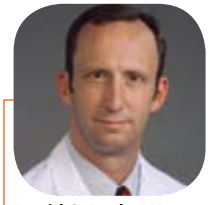


Eric A. Higginbotham, MD
919-684-5536
Particular Clinical Interests and Skills: Pediatric emergency medicine
Faculty Rank: Assistant Clinical Professor
Division: Emergency Medicine
MD Degree: MD, University of Texas - Houston, 1996
Residency: Internal Medicine and Pediatrics, Duke University Medical Center, North Carolina, 1996-2000
Emergency Medicine, University of North Carolina at Chapel Hill, 2002-2005

G. Chad Hughes, MD
919-668-0903
Particular Clinical Interests and Skills: Adult cardiac surgery with an interest in surgery of the thoracic aorta including disorders of the aortic root, ascending aorta, aortic arch, descending and thoracoabdominal aorta, endovascular repair of the thoracic aorta
Faculty Rank: Assistant Professor
Division: Cardiovascular and Thoracic Surgery
MD Degree: MD, Duke University School of Medicine, North Carolina, 1995
Residency: General Surgery, Duke University Medical Center, North Carolina, 1995-2002
Fellowship: Cardiothoracic Surgery, Duke University Medical Center, North Carolina, 2002-2005

Tracey Krupski, MD
919-684-2446
Particular Clinical Interests and Skills: Urologic oncology and health services research, general urology
Faculty Rank: Assistant Professor
Division: Urology
MD Degree: MD, Medical College of Virginia, 1996
Residency: General Surgery, University of Virginia Hospital, 1998-1999
Urology, University of Virginia Health Sciences Center, 1999-2002
Fellowship: Urologic Oncology Fellowship, 2002-2003
Urologic Research Fellowship, 2003-2004

Ulysse (Lee) G. McCann, III, MD
434-791-3009
Particular Clinical Interests and Skills: Adult cardiac surgery, thoracic oncology, and vascular surgery
Faculty Rank: Assistant Clinical Professor
Division: Cardiovascular and Thoracic Surgery
MD Degree: MD, University of Texas, San Antonio, 1996
Residency: General Surgery Residency and Research Fellowship, SUNY Upstate Medical University, New York, 1996-2003
Fellowship: Cardiothoracic Surgery, Baylor College of Medicine, Texas, 2003-2005



David S. Ruch, MD
919-613-7797
Particular Clinical Interests and Skills: Nerve injury and repair, fractures of the upper extremity, tendon injuries, and joint replacement in the upper extremity
Faculty Rank: Professor
Division: Orthopaedic Surgery
MD Degree: MD, Bowman Gray School of Medicine, North Carolina, 1988
Residency: Orthopaedic Surgery, Bowman Gray/Baptist Medical Center, North Carolina, 1988-1993
Fellowship: Hand, Microvascular, and Upper Extremity Fellowship, Duke University Medical Center, North Carolina, 1993-1994

Cynthia E. K. Shortell, MD
919-681-2915
Particular Clinical Interests and Skills: General vascular surgery with special interest in aortic and venous disease
Faculty Rank: Associate Professor
Division: General Surgery
MD Degree: MD, Cornell University Medical College, New York, 1984
Residency: General Surgery, University of Rochester, New York, 1984-1989
Fellowship: Vascular Surgery, University of Rochester, New York, 1989-1993

John J. Villani, MD, PhD
919-684-5537
Particular Clinical Interests and Skills: Initial evaluation, stabilization and management of acutely ill patients
Faculty Rank: Assistant Clinical Professor
Division: Emergency Medicine
MD Degree: MD, Duke University School of Medicine, North Carolina, 2002
Residency: Emergency Medicine, UNC Hospitals, North Carolina, 2005
Other: PhD, Managerial Economics, Wharton School, University of Pennsylvania, 1994

Terry S. Lowry, MD
919-684-2890
Particular Clinical Interests and Skills: Primary focus on adult cardiothoracic surgery
Faculty Rank: Assistant Clinical Professor
Division: Cardiovascular and Thoracic Surgery
MD Degree: MD, University of North Carolina at Chapel Hill, 1996
Residency: General Surgery, University of Rochester, New York, 2002
Fellowship: Cardiothoracic Surgery, University of Rochester, New York, 2005

Ian B. K. Martin, MD
919-684-5537
Particular Clinical Interests and Skills: HIV emergencies, oncologic emergencies, medical education, history-taking and physical diagnosis, inpatient general internal medicine
Faculty Rank: Assistant Clinical Professor
Division: Emergency Medicine
MD Degree: MD, MCP, Hahnemann School of Medicine, Pennsylvania, 2000
Residency: Emergency Medicine/Internal Medicine, University of Maryland Medical System, 2000-2005

ON THE SPOT

Q: At what point do orthopedic injuries in weekend athletes need surgical evaluation?

A: "Signs which warrant immediate surgical evaluation:

- **Significant deformity.** Pain may not be the best indicator, but deformity is usually apparent to both patient and physician.
- **Absence of function.** Patients say they can't move a joint, but when pressed, they are able to move while the motion is limited by discomfort. There is a real difference between unwillingness and true inability to move a joint.
- **Extensive bruising.** Large hematoma or significant bruising along the muscle or tendon generally indicates a musculotendonous rupture, requiring earlier and more aggressive treatment.

The most important practical advice is establishing a working diagnosis in 10-14 days. The vast majority of injuries can be effectively treated if intervention is initiated during this window. After three weeks, many disorders undergo scar formation, limiting outcomes regardless of whether surgery is ultimately undertaken."

—David S. Ruch, MD

Three questions

A View from the Hill: A chat with Nancy Short, BSN'76, RN, MBA (Fuqua '91), DrPH, assistant dean, Duke School of Nursing, and Robert Wood Johnson Foundation Health Policy Fellow

The first Duke nurse to be awarded a prestigious RWJF Health Policy Fellowship, Nancy Short landed a plum assignment—serving in the office of U.S. Senate Majority Leader William Frist. As she wraps up her 18-month stint on the Hill, which ends in December 2005, Short took a few moments to talk with us about her experience.

What exactly is your role in Senator Frist's office?

I conduct research to frame issues that are priorities for the Senator. I offer background information and make recommendations about what actions to take on an issue, such as proposing legislation, writing opinion editorials, or delivering speeches on the Senate floor. I also represent the Senator and other health team colleagues at meetings and organize briefings with experts from public and private organizations.

Lately I've been working on problems related to methamphetamine abuse. I've been involved in reauthorization of the Ryan White Care Act, two obesity reduction bills, a trauma system reauthorization, and Sen. Frist's bill to establish a Global Health Corps. Most recently, I've participated in discussions about preparedness for an avian flu outbreak and worked on health disparities legislation, which is a high priority for Sen. Frist before his term ends in 2006.

What have you learned about the inner workings of Congress?

That there's a big difference between policy and politics—and that politics have to be dealt with even as you're developing good health care policy. Members want to be re-elected, so they don't ignore the politics of the election cycle.

Another thing I've learned is that there is no standard way issues rise to the attention of Congress. The skills of advocacy groups, the media, emotional responses to events such as the Terri Schiavo case, and even acts of nature such as Hurricane Katrina help set the agenda.

So what can clinicians do to influence health care policy?

It's all about building relationships. Health care leaders at Duke and elsewhere need to make regular contact with elected officials so that when a health care issue comes up, officials will seek their advice. Clinicians need to become adept at delivering short messages in layperson's terms about health care issues; they can make phone calls and send letters, e-mails, and faxes as there is always a high interest in what constituents are feeling. I suggest you avoid sending mail because regular mail takes weeks to go through security procedures and often arrives damaged.

Of course, we can also vote, pay attention to health care issues, stay informed, and encourage our colleagues to do the same. When I return to the nursing school in January, I want to create innovative models for public policy throughout the curriculum so that our masters and doctoral programs are graduating nursing leaders who will help shape public policy.

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DUKE CME CALENDAR

ON-SITE COURSES

COURSE	DATE	LOCATION	CREDIT	REGISTRATION
RADIOLOGY Abdominal Imaging & Musculoskeletal MRI Update	January 14-17, 2006	Nassau, Bahamas	18 credits	919-684-7228
MULTISPECIALTY SLE: New Horizons in Research and Treatment	February 11, 2006	Charlotte, NC	Up to 4 credits	704-849-8271, ext. 223
RADIOLOGY A Practical Approach to Musculoskeletal MRI	February 18-21, 2006	Walt Disney World Resort, FL	16 credits	919-684-7228

ONLINE COURSES

RESEARCH ETHICS

- "Social Sciences Research in Medical Settings"
- "Using Databases in Research"
- "Prisoners Involved as Participants in Research"
- "Protecting the Confidentiality and Privacy of Patients"
- "Protecting Research Subjects"
- "What Counts as Research with Human Subjects?"
- "Children Involved as Subjects in Research"
- "Ethical and Regulatory Considerations When Bringing a Medication to Market"
- "Informed Consent for Research"
- "The Fundamentals"

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These activities have been approved for AMA PRA credit.

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DUKE MEDICINE 75 EST. 1930

A view from the Hill

Medicare reimbursement. Preparedness for avian flu. Regulation of genomic medicine. Nancy Short has been working on some of the most critical health care issues facing the country as a Robert Wood Johnson Health Policy Fellow in the office of Senate Majority Leader William Frist. An assistant dean at the School of Nursing, Short is the first Duke nurse to be selected for the competitive fellowship.

Read what Short has to say about her experience, the inner workings of Congress, and why you may want to think twice before mailing that letter to your senator, page 64.

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