

Vital Signs

Boonshoft
School of Medicine
WRIGHT STATE UNIVERSITY



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Primary Care Physicians

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From the Editor

Wanted: Primary care physicians

Usually in this space, you'd find the "Dean's Perspective" by Howard Part, M.D., dean of the Boonshoft School of Medicine. But in this issue you'll find him in the "Second Opinion" column on page 16, where he reflects on why he chose a career in primary care. It took a little arm-twisting to convince Dr. Part to share his story with us, but I think you'll find his reminiscences on his father's 40 years as a physician in Harlem insightful.

Life experiences often guide a physician's career choice, just as they did for the dean. Cynthia Olsen, M.D., was also influenced in her career path by her father, a teacher and researcher in virology and immunology who developed the first feline leukemia vaccine. But after five years of lab work as an undergrad, Dr. Olsen decided research was too isolating and enrolled in medical school at Wright State. You can read more about her career as a small-town doctor and Boonshoft School of Medicine faculty member on page 18.

During the ongoing national debate about health care reform, the need for primary care physicians has played a central role in discussions on improving care while lowering costs. To learn why the number of new primary care physicians continues its precipitous decline just when the need has never been greater, read our in-depth report "Wanted: Primary care physicians" on page 8.

As always, we'd love to hear what you think about this story or any of the other articles featured in *Vital Signs*. Send us your comments, suggestions, or story ideas. We want to hear from you.



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Vital Signs

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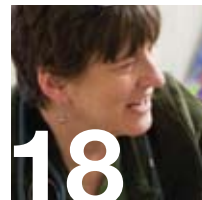
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**WANTED:
Primary Care
Physicians**
In terms of the nation's health care needs, the decrease in primary care specialists couldn't come at a worse time...



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He went where he perceived the greatest need, and I think his perception was absolutely accurate...



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Transplant center brings gift of life to Dayton patients



When Thavam Thambi-Pillai, M.D., arrived in Dayton in the spring of 2006, transplant surgery in the area was something of an open secret. Surgeons had been performing kidney transplants at Miami Valley Hospital (MVH) for more than 30 years, and dozens of gravely ill patients were benefitting from the procedure each year.

Even so, he said, most people in the area—including many physicians and staff members at the hospital—were not aware that transplant surgery was offered in the region. Thambi-Pillai, now an assistant professor of surgery with the medical school and associate director of transplantation for the hospital, came to Dayton to change that fact.

More specifically, he hoped to link the hospital's transplantation services to the medical school in order to create a collaborative academic transplant center.

The center, Thambi-Pillai explained, serves to bring together resources from across the community at a single site.

"Patients just have to come to one place to see their surgeon, their nephrologist, their social worker, their dietician, and whoever else they need to see," he said. "That's the model we want to grow, in a very comprehensive manner."

In just over three years, the center has already made much progress. In 2009, transplant surgeons at MVH performed 42 kidney transplants, an increase of nearly 50 percent since 2006. In addition, living donor transplants, which are associated with much better patient outcomes, surged to 13 in 2009, the highest level in the hospital's history and a 300 percent increase over the previous year. Overall outcomes for patients are on par with national averages, but the wait time for a transplant in Dayton is significantly shorter. This combination has allowed the center to evolve into a regional transplant center serving 17 counties. It has also led patients from as far away as Philadelphia to register with the center and travel here to undergo surgery when a donor organ becomes available.

"We have come a long way," Thambi-Pillai said, "and still there is room to grow and improve. We have an excellent foundation now to build on."

While the hospital is the only one in the Dayton region certified as a transplant center by the United Network for Organ Sharing (UNOS), it is approved solely for kidney transplants.

In 2010, Thambi-Pillai hopes the center will gain UNOS certification to offer pancreas transplants for patients with diabetes, and he is confident that approval for other organs and procedures will eventually follow.

The integration of an academic component also creates new clinical research opportunities and supports the education of medical students and surgical residents. Building on these advantages, Thambi-Pillai hopes to establish a dedicated fellowship in transplant surgery and to lay the groundwork for future clinical trials and basic scientific research.

"Transplant is a field where you can see the bench research being translated to clinical practice very quickly," he said. "It's always exciting seeing what you did in the lab three years ago helping your patients now."

The need to raise awareness, of the center and about transplantation and organ donation in general, is never far from his thoughts.

"That's our job in the transplant community," he said. "To educate the public."

"The only good thing that can come out of death," he often says, "is organ donation. I always tell my patients who thank me, 'I am only one of the faces you see. You should be thankful to the donor families who made this a reality for you.' Some family, in their grief, has done something wonderful in helping them." **VS**

High-tech hope for better global health

Even as modern technology is improving the prevention, diagnosis, and treatment of illness and disease, patients in many parts of the world often lack access to even basic health technology. Katherine Cauley, Ph.D., associate professor of community health and director of the Center for Healthy Communities, is playing a key role in an international project whose goal is to address this disparity.

In June 2009, the World Health Organization (WHO) launched its “Global Initiative on Health Technologies,” and Cauley was selected to serve on the project’s Expert Advisory Group for Innovative Technologies. She is the only U.S. representative to the group, which includes members from 23 countries spanning North, Central, and South America, as well as Africa, Australia, Europe, Asia, and the Middle East.

The goal of the project is to bring the benefits of core health technologies to resource-scarce areas of the world. The project is organized by the Department of Essential Technologies within the

WHO Division of Health Systems and Services and is supported by the Bill & Melinda Gates Foundation.

The three-year project began with a meeting in Singapore to review current global health issues and potential technology solutions. Based on this review, the committee collaborated virtually to develop a call for proposals, which was released in November 2009. In 2010 the committee will reconvene in Copenhagen to review proposals submitted by businesses and other organizations.

Cauley said the WHO may have invited her to participate in the project because of her work with HIE^x, a regional, community-based electronic health record project that is part of the Nationwide Health Information Network Cooperative.

The scope of the WHO project certainly encompasses information technology, Cauley said, “but it could also include everything from water treatment plants, to solid-state battery-operated surgical devices, to boosting food products to have more nutritional benefits.”



This broad approach is deliberate, as the WHO hopes to assess and potentially address a wide range of needs in varied and innovative ways.

In addition, Cauley said, it will allow the organization to “take advantage of the things that are going well in a country. If they’ve already got the water problem licked, or they’ve already got a good infrastructure for taking care of the elderly, or a good clinic system for maternal-child health, we can build on those resources and continue to support them while adding resources and technologies that can enhance the health of the community, and ultimately the country.” **VS**

Medicine and its Muses

Boonshoft School of Medicine hosts its first Music and Medicine Symposium

The connection between music and medicine is an old one, stretching back through the ages to ancient Greece. Apollo, the Greek god of healing and music, was the father of both Asclepius and the Muses. The rod of Asclepius, a snake-entwined staff, has endured as the symbol of medicine to this day.

So it was fitting when the Boonshoft School of Medicine hosted its first Music

and Medicine Symposium in June. Billed as an “Improvisation in Music, Medicine, and Life,” the daylong symposium explored the meeting of these seemingly separate worlds through a series of interesting talks and inspiring musical performances by faculty scientists, physicians, and musicians, as well as special guests.

The event, co-sponsored by the WSU Department of Music and the Boonshoft School of Medicine, also featured internationally renowned opera singers Rodrick Dixon and Alfreda Burke, who delivered the keynote presentation and participated in the encore concert that concluded the event. **VS**

For more information on the upcoming 2010 Music and Medicine Symposium (to be held in May) visit wright.edu/music/music-med

Earl H. Morris Endowed Lecture

Nobel Laureate Oliver Smithies, D.Phil., shares notebook pages from his 60 years as a bench scientist



Oliver Smithies with Herbert and Marion Morris, who established the Earl H. Morris Endowed Lectureship in honor of Herbert's father, Earl H. Morris, M.D.

Nobel Laureate Oliver Smithies' 60 years of research as a bench scientist are meticulously recorded in nearly 140 notebooks spanning his entire career, from his time as an undergraduate student at Oxford, through the groundbreaking research that led to the Nobel Prize, and up to the present day. The notebooks chronicle six decades of scientific research by Smithies, who was awarded the 2007 Nobel Prize in Physiology or Medicine for his discovery, along with Mario Capecchi and Martin Evans, of a process for introducing specific gene modifications in mice using embryonic stem cells.

Last July, Oliver Smithies, D.Phil., Excellence Professor of Pathology and Laboratory Medicine at the University of North Carolina at Chapel Hill School of Medicine, delivered the 2009 Earl H. Morris Endowed Lecture in White Hall. With wry humor, a childlike curiosity,

and an obvious love for science, the 84-year-old Smithies held the overflowing audience enthralled as he used pages from his notebooks to illustrate the life of a scientist.

Mother's starch leads to improved gel electrophoresis

According to his notebooks, the work that eventually led to the Nobel began January 1, 1954. Working at a laboratory in Toronto, he was doing electrophoresis of insulin on filter paper. "I was trying to get the insulin to behave properly and was rather frustrated," he said. He found another method using starch, but it was very labor-intensive. Then he remembered his mother cooking up starch for his father's collars when he was a child. "And I thought, well if I cook the starch up and make a gel... I can stain the gel, and I will see the bands very easily," he said.

"I found out that, sure enough, insulin migrated as a band, and that was very satisfactory.

"By chance I had invented an important method," said Smithies. His discovery greatly improved gel electrophoresis, a process of separating proteins to identify genes using starch, and became standard in laboratories. Curious, he decided to try a plasma protein in the gel. At that time, only five plasma proteins were known. The next day he found a total of 11 components.

Just before publishing, he ran a sample of another individual in his study. "It was very strange," he said. "You can see all these bands are there, which were not in the previous sample."

It turned out to be an inherited difference in the haptoglobin protein, which binds hemoglobin. He collaborated on the research with Norma Ford Walker, Ph.D., professor of human genetics at the University of Toronto and director of the newly formed Department of Genetics at the Sick Kids Research Institute.

He remembered visiting Walker's clinic. "It was a rather sad, because people would come with problems you couldn't do anything about," he said. "I remember a little child, a beautiful little girl with cystic fibrosis. At that time there was nothing that could be done."

Together Smithies and Walker discovered there was one gene difference in the haptoglobin protein sample. He decided to find what that difference was.

Gene recombination possible

He began to work with DNA instead of proteins. He was trying to determine which genes are related to hemoglobin synthesis. His work with fetal and adult globin genes found two genes that exchanged sequences at the DNA level by homologous recombination. “I began to think maybe we can use this homologous recombination to do something useful,” he said.

Then, while teaching, he read a paper by another researcher that demonstrated a process to isolate rare pieces of DNA. Smithies decided to try this process to find out if homologous recombination or gene targeting was possible. “It went pretty quick,” he said. “That paper was April 2, and here’s my note on April 22 on how to have an assay for gene placement. This page, of all of my notebooks, is probably the best page of any page. Because on it are all the principles that show that gene targeting is possible.”

Your experiment is just not going to work

He decided to make things simpler, but then a student pointed out a flaw in his experiment. “She said ‘You know, Oliver, your experiment is not going to work. You’re looking for a way of introducing DNA into the beta globin locus, and you’re using bladder carcinoma cells. Bladder cells don’t make hemoglobin. Even if you put a selectable gene in there, it probably won’t be expressed.’

“So what did I do? I went flying,” Smithies said. An avid pilot, he flew off with friends and went sailing in the Florida Keys. “I came back all full of life. I’m going to start again, and I’ll now use cells that are making hemoglobin, and then I won’t have a problem.”

Nobel Laureate Oliver Smithies, D.Phil., visited campus in July and delivered an entertaining lecture to an overflow audience.

But to use the new cells, he needed a special apparatus to punch holes in their membranes. So he made one out of a baby bathtub, an old test tube rack, and bits and pieces from Radio Shack. “That was the apparatus,” he said, “which did the critical experiments for showing that gene targeting was possible.”

According to a page from his notebook three years after the April 22 entry, this was the first demonstration that it was possible to modify a gene in a planned way.

It might be possible to make a mouse

But how could it be used? “It wasn’t any good for gene therapy. It was much too rare for use in gene therapy,” he said, “but it might be possible to make a mouse.”

Smithies knew of Martin Evans’ work on embryonic stem cells in mice, so he asked Evans for some of his cells. “This is another good lesson for students: never hesitate to ask another scientist for help,” he said. “Most often you will get help.”

Smithies’ experiment with Evans’ cells worked the first time. “Some experiments do,” he said. “So we knew it was possible to make mouse embryonic stem cells, and we could then make an animal from it.”

Showing a photo of the first animal model they made, he said, “It’s a little bit

special for me, because, see, it’s cystic fibrosis. You remember me telling you about the little girl, and that we couldn’t do anything. It was very emotional to say that we can make a model of that disease in a mouse that might help other people with cystic fibrosis in the future.” His lab had produced the world’s first animal model of cystic fibrosis.

It helps if you’re born with happy genes

Smithies offered advice to researchers when their experiments don’t work. “Most experiments don’t work, really,” he said. “That’s why I say it’s very important that you find something that you enjoy doing. You have to learn to enjoy every day and not depend on it necessarily giving you the answer that you want. It helps if you’re born with happy genes. It turns out I am.”

Today, Smithies is still working on weekends. Why? “Because it’s fun,” he said. “The best days of the weekend are the days when I do an experiment. I go flying, I take (my wife) Nobuyo to lunch, then I do an experiment.”

He said he doesn’t know what the future may bring, “but that’s what makes science exciting. Because you don’t know what’s on the next page.” **VS**



Issues In Depth

WANTED:

Primary Care Physicians

The troubling
decline and
vital importance
of generalist
medicine

Phil Neal

Since its foundation in 1973, the Wright State University Boonshoft School of Medicine has embraced a strong emphasis on primary care.

This priority has always been clearly reflected in the school's mission, which includes "focusing on generalist training that is integrated, supported, and strengthened by specialists and researchers."

"We put all the branches on the tree, but we start at its base, at the trunk," said Gary LeRoy, M.D., associate dean for student affairs and admissions and associate professor of family medicine. "The foundation is primary care, so our students understand the value of that, no matter what specialty or subspecialty of medicine they go into."

In the 1990s, the school was among the nation's leaders in graduating physicians who pursued careers in primary care, including family medicine, general internal medicine, and pediatrics. Today, the school's numbers reflect a widespread trend away from primary care.

In 2010, 43 percent of new Boonshoft graduates matched in primary care residency programs, compared to 37 percent of U.S. medical school seniors, according to the National Resident Match Program. While these percentages may seem healthy, the number of new physicians who actually plan to practice as generalists has plummeted. According to the AAMC's annual Medical School Graduation Questionnaire for 2009, 73 percent of graduates entering primary care plan to pursue a subspecialty and practice in a narrower field, such as medical genetics or pediatric emergency medicine.

During the same time span, interest in family medicine residency programs has

declined steeply, with the field attracting 17.3 percent of new U.S. medical school graduates in 1997, but just 7.8 percent in 2010. In terms of real numbers, 2,340 U.S. medical school seniors matched in family medicine in 1997 versus 1,169 in 2010, even as the total number matched to postgraduate year 1 positions grew from 13,554 to 14,992.

"In the last decade, in particular," said Howard Part, M.D., medical school dean, "interest in the primary care specialties by U.S. medical school graduates has fallen off a cliff."

A complex array of powerful disincentives

Individual medical schools, organizations such as the AAMC, and many state legislatures have long been fighting—and generally failing—to increase interest in primary care. According to the American Medical Association (AMA), only 32 percent of physicians in the United States were practicing in a primary care specialty in 2007. In most other developed nations, the ratio of primary care physicians to subspecialists is exactly the opposite, or closer to 70:30.

Part of the reason for the skewed U.S. specialty numbers may have an economic component. The AMA reports that the average educational debt of medical school graduates in 2008 was \$154,607, an increase of 11 percent over the previous year.

"If you're a 20-something thinking about choosing a career path, and wanting to

have a family and put your kids through college," Part said, "and you've really never taken on much debt, \$155,000 is very scary. We think it is influencing student choice."

Given this debt load, LeRoy believes, the allure of lucrative subspecialties can be all but irresistible for many students, though he strongly encourages them to keep an open mind.

"It's not as though going into primary care gives you a vow of poverty," he said. "It's all relative. They're going to be making more than 90, maybe 95 percent of the U.S. population."

While concerns about the hardships of a primary care career may be overblown, they are not completely unfounded, according to Larry Lawhorne, M.D., professor and chair of geriatrics and professor of family medicine.

"The problem is that compensation has been driven by procedures and interventions that are highly technical and require very skilled practitioners," Lawhorne said.

In essence, most insurance policies are designed to pay far more—and more readily—for an MRI or a CT scan, for example, or even for a consultation with a subspecialist, than for a visit with a primary care physician. This reimbursement structure is driven in part by the cost of researching, developing, and using advanced new technology, but it also reflects an underlying value system that prioritizes high-tech intervention over high-touch prevention.

“Generations of Americans have been taught to value subspecialist care,” LeRoy said, “and their insurance will pay for it, so they don’t see how much it’s really costing. You walk away oblivious to the actual cost, to you or to society, of your health care.

“It comes down to economics,” he added. “If this country is going to continue to reward students for going into proceduralist types of subspecialties, then they’re going to go there. They just are.”

To be fair, an individual’s career choice involves much more than a simple financial equation, no matter how stark a contrast one may perceive between educational debt and immediate earning potential.

“I’m absolutely convinced the students we accept here are all in it for the right reasons,” Part said.

While the income and prestige associated with many subspecialties often factor in to students’ decisions, he feels specialty choice also depends on what appeals to them intellectually, as well as the influence of mentors and role models.

Cynthia Olsen, M.D., professor and executive vice chair of family medicine, director of clinical operations for Wright State Physicians, and director of the Yellow Springs Family Health Center, strongly agrees.

“I believe in the abundance model,” Olsen said, “and I think there have been a lot more opportunities for students to look at career paths other than family medicine.”

At the same time, the pressures and challenges involved in primary care today—including the drive to see more patients in less time, constant struggles with insurance companies over authorization and payment, and even the pernicious influence of direct-to-

consumer drug advertising—may be diminishing its appeal to many students.

“There are a lot of frustrations out there in practice,” Part admitted. As pressure on primary care physicians has mounted, he said, “The role models we’ve typically counted on to share the joy of a generalist profession have been harder to come by.”

That’s why physicians like Olsen play such an important role within the medical school.

She said, “When people ask me, ‘Do you still like going to work? Do you still like your job?’ I can honestly say, ‘Absolutely. I love what I do.’

“There’s a tradeoff between wealth and other things that satisfy you or don’t,” Olsen explained. While she makes an excellent living, she said, “There are things about being a family doctor that are much more important to me.”

For example, she enjoys the daily stimulation of a highly varied caseload, as well as the challenges of staying current on a broad spectrum of medical knowledge (rather than focusing in depth on a specific subfield). Most importantly, Olsen relishes the opportunity to develop close, enduring relationships with her patients, and to fulfill a vital need in her community.

“Not that specialists can’t also have that,” she conceded, “but I think you have to look at those parameters when you’re trying to decide, ‘Can I do this for the next 30 or 40 years?’”

An aging and expanding population

In terms of the nation’s health care needs, the decrease in primary care specialists couldn’t come at a worse time. The U.S. Department of Health and Human Services (HHS) estimates that 65 million Americans live in areas currently experiencing a shortage in primary care

services, and the Institute of Medicine reports that more than 16,000 additional primary care physicians are required to close this gap. According to the HHS, the shortfall in the overall public health workforce (including physicians, nurses, physician assistants, and other allied health professionals) is projected to reach 250,000 by 2020.

“If this country is going to continue to reward students for going into proceduralist types of subspecialties, then they’re going to go there. They just are.”

In a December 2008 report, the HHS’ Health Resources and Services Administration projected that the ratio of physicians to population will continue to decline steadily, due in part to an aging physician workforce (with many reducing practice hours and approaching retirement), relatively slow growth in the number of new physicians entering the workforce each year (across all specialties), and ongoing growth and demographic changes in the U.S. population. The report predicts a 22 percent increase in demand for physician services between 2005 and 2020 due to an expanding and aging population.

“We’re going to basically double the number of people over the age of 65 in this country between now and 2030, from 36 million to 72 million,” Lawhorne said. The increase among those 85 or older will be even greater. “We’re going to go from about 4 million today to 20 million around 2050.”

Older patients tend to need more time at each office visit and require care that is often more costly than younger patients, especially as many develop multiple chronic conditions requiring ongoing treatment or careful management. In light of this reality, Lawhorne accepts that



Larry Lawhorne, M.D., and Jess Levy, a third-year medical student, look over an electronic health record (EHR) in the Wright State Physicians Family Medicine practice office.

it will be impossible to prepare enough primary care physicians, let alone geriatricians, to care for so many older adults. Even so, he is hopeful that new initiatives at the medical school, including the recent establishment of a fellowship in geriatric medicine, will help address the coming need.

“Our goal at the medical school,” he said, “is to incorporate principles of geriatric medicine into the first two years, the basic science years, as well as the clinical years.”

In addition, geriatric medicine principles are already being integrated within the medical school’s Emergency Medicine, Family Medicine, and Internal Medicine Residency Programs. With time, he hopes to build connections with the rest of the residency programs as well.

“Physicians, almost no matter what their specialty, need to be prepared to take care of older adults,” he said. “Even those who are going into pediatrics are going to deal with grandparents raising grandchildren.”

Beyond the inevitable aging and continuing expansion of the U.S. population, demand for health care is likely to skyrocket with the passage of sweeping federal reform legislation expected to bring between 30 and 50 million new people into the health care system. In late 2008, the AAMC projected a shortfall of 124,000 to just under 160,000 physicians by 2025 based on population trends alone. Universal health care coverage, the same report concluded, would increase demand by

25 percent, creating the need for 31,000 additional physicians.

From national programs to local initiatives, a variety of efforts are underway to increase the number of medical school graduates, fund more and larger residency programs, create incentives and subsidies for new physicians who pursue primary care specialties, and revamp key insurance company practices. While few are optimistic that these efforts will completely address the looming crisis, they are resulting in some groundbreaking innovations that are generating excitement and creating a genuine sense of hope for the future.



Primary care: the best medicine

In any discussion of health care reform or public health improvement, primary care has to play a central part. Evidence illustrating the benefits of primary care for individuals, populations, and the health care system as a whole is both abundant and clear. A white paper published by the American College of Physicians (ACP) in 2008, for example, reviewed 20 years of research, including roughly 100 journal articles and other scientific publications.

Based on this review, the paper reported, “The availability of primary care is positively and consistently associated with improved outcomes, reduced mortality, lower utilization of health care resources, and lower overall costs of care.”

To cite one significant study in particular, in 2005 Barbara Starfield, M.D., M.P.H., of Johns Hopkins University published an analysis of four years of data from 3,075 U.S. counties, or 99.9 percent of all counties nationwide. She found that the number of primary care physicians in a given area strongly correlates with lower mortality rates from heart disease, cancer, and many other causes. Surprisingly, Starfield also found that higher numbers of specialists were often linked to an increase in mortality.

Other large-scale studies cited in the ACP paper found that adding just one primary care physician for every 10,000 people reduces overall mortality by anywhere from 14 to 49 deaths per year, as well as decreasing inpatient admissions (5.5 percent), outpatient visits (5.0 percent), emergency room visits (10.9 percent), and surgeries (7.2 percent).

Gary LeRoy, M.D., remains active in family medicine practice in addition to serving as an associate dean with the medical school.

While gratifying, these kinds of results are certainly not surprising to Mark Clasen, M.D., Ph.D., professor and chair of family medicine.

“Everyone who studies the impact of family medicine knows what a cost-saver and life-saver it is to have that kind of doctor,” Clasen said. “That does not hold up for any other type of physician.”

Clasen is quick to acknowledge how vital and effective his subspecialist colleagues are. Even so, he believes primary care physicians play a unique and indispensable role by forging long-term relationships with patients, emphasizing prevention and wellness, and helping to coordinate care from other providers. This coordination can actually make subspecialist care more effective, he said, which is why primary care physicians are capable of having such a broad, consistently positive impact. It also helps to explain why many countries with a larger percentage of primary care physicians tend to have significantly lower health care costs, higher care quality, and better patient outcomes than the United States.

“One of the worst things that can happen is to have a number of specialists treating a patient with nobody coordinating that care,” Clasen said. “Every time health care gets disintegrated, there are worse outcomes for patients.”

For example, a patient who sees a number of subspecialists, even for very valid reasons, may end up with unnecessary, minimally useful, or duplicate tests or procedures. In another familiar scenario, a patient might wind up with multiple prescriptions, each helpful in isolation, that could counteract one another or even interact to cause dangerous side effects. In these cases and others, a primary care physician can play an invaluable role by helping patients manage and make sound decisions about their overall care.

To illustrate this concept, Part likens health care to a wheel with primary care at its center, holding the wheel together and enabling it to keep turning.

“The primary care physician can serve as the hub,” he said, “and various spokes of the wheel are going out to different parts of the health care system patients need to access, whether it’s a surgeon, a cardiologist, a dietitian, or a physical therapist.

“There’s that central focus,” he added, “where one physician really understands the entire picture and is able to have some ongoing discussions with the patient in the context of that whole picture.”

Keeping the focus on patients

In an effort to build on the natural strengths of primary care and bring its benefits to more patients, a group of physicians and educators affiliated with the medical school is working to pioneer a new approach to health care: the Patient-Centered Medical Home (PCMH).

“We want to spend money differently and focus on what patients need, and not what insurance companies and hospitals need,” said Ted Wymyslo, M.D., associate clinical professor of family medicine and director of the Family Medicine Dayton Initiative, which seeks to apply the principles of PCMH to patient care and medical education.

“That’s why this Patient-Centered Medical Home is such an important concept, and one that probably everyone could embrace,” Wymyslo added. “It’s the best chance we’ve got for a model of health care for the country, because it keeps reflecting back on what’s good for the patient.”

The concept of a “medical home” offering pediatric primary care and coordination of other medical services

for children originated in the late 1960s. The more detailed PCMH model was created 40 years later, when the American Academy of Family Physicians, the American Academy of Pediatrics, the American College of Physicians, and the American Osteopathic Association outlined a set of joint principles to define the PCMH in early 2007. Today, the National Committee for Quality Assurance (NCQA) evaluates and recognizes primary care practices striving to implement these principles through its Physician Practice Connections–Patient-Centered Medical Home program.

“Everyone who studies the impact of family medicine knows what a cost-saver and life-saver it is to have that kind of doctor,”

The Wright State Physicians Family Medicine practice is working toward NCQA recognition and has implemented many of the core PCMH principles at its location in the new Ollie Davis Medical Arts and Education Center, which opened in 2009. The practice already has electronic health records (EHR) in place, for example, that are revolutionizing the way physicians care for individual patients and promote public health on a population level.

“Since I know what the complaints are for the people I’m going to see this afternoon,” Clasen said, looking over a detailed medical record on a laptop computer, “I’m actually going to have done most of the work for each of the visits before they get here.”

In addition to making patient visits more focused and effective, the EHR allows Clasen and his colleagues to look at their entire population of patients to analyze trends, identify issues, and evaluate results.

“It’s population medicine,” LeRoy said, “but it’s individualized, because you can use that technology to make it very specific for each individual. It’s really bringing health care into the 21st century.”

Another benefit of the EHR is the ability to provide patients with secure, remote access to their own health records,

“Whether or not it comes out of Washington, we as health care educators and medical professionals have to say something in concert. To do nothing is not an option.”

allowing them to be more informed and active in the management of their care.

“Anywhere in the world that patients can get on the Web,” Wymyslo said, “they can get into their personal record, with all their labs, all their X-rays, all their diagnoses.”

The combination of sophisticated data management and open patient access also makes it possible to shift the emphasis of primary care away from treatment and toward more effective prevention and management.

“Our system right now depends more on patients calling us and scheduling an appointment,” Wymyslo said, “So we’re trusting them to know what they’re due for, or what they need, and we’re also largely depending on the patient to be symptomatic—something hurts, something is bothering me, so I’d better go see the doctor.

“What we want to do in the future,” he continued, “is have regular, scheduled interfaces with patients that are timed optimally to pick up things at an early stage. It’s a whole different way of managing people’s health, and it’s related to proactively determining what

the patient needs instead of reactively helping them with problems or concerns or complaints.”

“It’s a big conceptual shift from a disease-oriented health care system to a preventive health care system,” LeRoy explained. “It’s more effective to prevent an accident than to say, ‘Okay, we’ve got lots of gear out here to mop up after the accident.’”

Another technology-driven component of the PCMH is enhanced communication with patients, who can now reach their physicians by e-mail or text message, and can even schedule appointments online. The theme of communication is also important as physicians in the practice work to connect and collaborate with other care providers serving their patients. In addition, the practice conducts educational outreach to share important health information with patients and community members. Throw in additional touches like electronic prescriptions (“ecribing”) and few or no time limits on the length of patient visits, and the practice is very close to qualifying for NCQA recognition as a Level-3 PCMH.

Legislation and compensation

In addition to their efforts to implement PCMH principles locally, Wymyslo, LeRoy, Clasen, and Part have worked with state representatives to develop bipartisan legislation promoting PCMH in Ohio. House Bill 198, co-sponsored by Representatives Peggy Lehner of Dayton and Peter Ujvagi of Toledo, would establish a PCMH demonstration project by supporting, monitoring, and evaluating PCMH practices in Dayton, Toledo, Akron/Canton, and Athens. The project would help to determine the promise (as well as any potential limits) of PCMH as a model for more widespread adoption throughout the state.

In addition, the bill would create scholarships for medical students who commit to practice primary care in the state.

While the bill is still awaiting passage amid negotiations over the role and participation of advanced practice nurses and other allied health professionals, it illustrates the potential importance of the PCMH model. And Clasen and his colleagues are committed to staying the course, with or without legislative support.

“It is such a powerful model,” Clasen said, “that we’re even meeting with insurance companies now that are approaching us wanting to pay (a care coordination fee) each month for each of our insured people.”

This kind of shift in reimbursement is crucial, Wymyslo said. From implementing EHR to expanding hours and activities, switching from a traditional practice model to that of a PCMH takes a substantial amount of money, time, and effort, he explained. Without compensation commensurate with enhanced care quality and better patient outcomes, it can be difficult for physicians to justify such costly and far-reaching changes. Fortunately, paying more for coordinated primary care also makes sense for both insurance company profits and national health care expenditures, which by some estimates include as much as 30 percent needless spending.

The transition to a PCMH model, Wymyslo said, “is affordable if we can go ahead and stop the waste—expenditures that are not translating into better health for anybody. Let’s get the cost to where it’s going to get the most bang for your dollar, which will be the primary care physician’s office.”



Despite the challenges and uncertainty that lie ahead, Mark Clasen, M.D., Ph.D., is optimistic and excited about the future of primary care.

A bright future for primary care?

While the future of primary care, like the prospects for meaningful health care and insurance reform, remains uncertain, physicians affiliated with the medical school remain both committed and hopeful.

“We’re moving in the right direction,” LeRoy said.

“Something has to happen,” he added. “Whether or not it comes out of Washington, we as health care educators and medical professionals have to say something in concert. To do nothing is not an option.”

Part agrees with his colleague and shares his optimism.

“I still think now is a great time to go into medicine, unequivocally,” he said.

In particular, Part added, “I think we have a new hope for family medicine now, where students are going to have an opportunity to spend time with our doctors in a setting that is fairly close to a PCMH, and I think that will be a very good experience for them.”

As someone closely involved in both caring for patients and training the next generation of primary care physicians, Clasen may be in the best position to make predictions. He also may be the most optimistic.

“I think the student incentives are going to start changing,” he said, “and a lot more people are going to go into family

medicine for all of the positive things that are exciting us here—especially if they like the relationship side of medicine, knowing the whole person.

“With the concept of the medical home,” he added, “the technology, getting away from a ‘room-to-room-to-room’ approach to patient care, and comprehensively looking at disease management and high-level prevention, this is a wonderful workshop for the future.” **VS**

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A Second Opinion

**40 years
in the
trenches:**

**What
my
father
taught
me
about
medicine**

Howard Part, M.D.

My first exposure to medicine as a profession occurred when I was around 10 years old.

That's when I started accompanying my father to his internal medicine and dermatology practice in New York City on Saturday mornings. We had to leave early to make our way into the city from our home across the river in suburban New Jersey, but I didn't mind. It was fun for me to go and help out in the office, although in retrospect, I really didn't do very much. My dad put me to work filing and handling other minor tasks, but as often as not, I just spent time with him and saw how he went about his work.

My father practiced in an underserved neighborhood in the heart of Harlem, at the corner of 125th and Lennox, and he was one of only a handful of physicians there. His patients were 95 percent African-Americans, and to the best of my knowledge, there weren't any other Caucasian physicians practicing in the area. He chose to practice in that part of Manhattan because it was where he believed he could have the greatest impact. He went where he perceived the greatest need, and I think his perception was absolutely accurate.

Spending those mornings with my father made a big impression, because patients weren't very shy about telling me how much they thought of him. If you're the only physician around, by and large the relationships you have with your patients are going to be remarkably strong and positive. As a child, it meant a lot to learn that my father was doing something that people found valuable.

While in the city, we would go out to lunch occasionally (although this was often hard to do, because he was so busy). Even outside his office, the way people related to him, it felt like everyone considered him family. The role he seemed to play strikes me as similar to that of many physicians in rural areas, where they become woven into the fabric of a community, and most of the local residents know who they are.

Although we didn't live in the neighborhood, I felt like my father was embraced by the community, and I could sense that the emotional ties were mutual. "Love" might be too strong a word, but I know the people really cared for him, and he cared for them just as much.

When I eventually entered medical school and considered various specialties, one of the things that appealed to me most about primary care in general, and internal medicine specifically, was the opportunity to form long-term relationships with patients. That's remarkably gratifying, and you find yourself not only caring about patients' health, but also about them personally. I think physicians who do that are, by and large, much better at their craft.

Of course, I was also intrigued by the intellectual challenge of internal medicine. Having first contact with undifferentiated illness, and taking the initial steps to make a diagnosis, can be very intellectually stimulating and never loses its appeal.

My father stayed in the same practice for his entire career. After graduating from medical school at the age of 21 and then completing his residency, he enlisted in the army and spent five years in the Pacific. When he got back from WWII,

he started his practice in Harlem and was there until he retired in 1982. He was in the trenches practicing medicine every day, and he worked hard. He left the house early every morning, generally around 6 or 6:30, wouldn't get home until 7 at night, and maintained office hours on Saturdays his entire career.

Despite the demands of his profession, and even his frustration with some of the early changes to the U.S. health care system, my father was always thrilled that I followed in his footsteps. At a time when the growth and aging of our population are creating skyrocketing demand for physicians and other health care professionals, and when primary care providers in particular are needed more than ever, it is disheartening—if not altogether surprising—to hear stories of physicians advising their own children to choose a different path.

It is impossible to deny that we face many challenges today, including high student debt, a complex insurance system, and uncertainty in terms of potential reforms, in addition to the demographic shifts underway. Even so, I absolutely believe there is still no finer profession than medicine, and now is still a wonderful time to become a physician. Come what may, medicine will always be a profession in which you can earn an excellent salary (regardless of specialty), have an impact on people's lives by doing something they need and value, and enjoy variety and intellectual stimulation for the rest of your life. If there's a better job out there, I can't think of what it might be.

And I know my father would agree. **VS**

Everything old is new again: Cynthia Olsen leads the charge to sustain tradition, spur innovation

Phil Neal

Cynthia Olsen, M.D. ('85), believes in tradition.

Whether it's a family legacy of teaching and learning, the personal care and commitment exemplified by many old-fashioned country doctors, or a family practice's half-century history of service to the community, Olsen is passionate about preserving the best of the past, even as she eagerly prepares for the future.

As professor and executive vice-chair of family medicine, director of clinical operations for Wright State Physicians, and director of the Yellow Springs Family Health Center, Olsen is at the midpoint of a successful career as a physician and educator. To the extent that she dwells on her many achievements, though, it is only to trace their origins to early influences and experiences—and to consider the best ways to build on them while moving forward.

A father's example and encouragement

The earliest and strongest influence on Olsen was undoubtedly that of her father, a teacher and researcher with a Ph.D. in virology and immunology.

"I blame him for a lot of my choices," Olsen joked.

"As a child, I was fortunate to be exposed a lot to the biologic sciences," she explained. "My father spent a lot of

time with me in the backyard explaining how things worked, so I knew that in some way I would have a career that involved science."

She originally planned to follow closely in her father's footsteps and become a research scientist, especially given the excitement of working with him on his most successful project: the development of the first feline leukemia vaccine. Five years of laboratory work as an undergraduate at the Ohio State University, however, convinced Olsen that while she could certainly handle the rigor of a research career, she disliked its solitude.

"I found that to be intellectually rewarding but socially isolating," she said.

She had already planned to come to Wright State for graduate studies in microbiology, so it was a natural transition to apply to the medical school, where she enrolled in 1982.

"The people here were incredibly friendly," she said of her attraction to Wright State. In addition, having grown up on a small farm outside of Columbus, she was drawn to the young university's comparatively bucolic setting.

"It wasn't as developed then," Olsen said. "In my day, there were cows across the street. You could look out front, from the medical school, and see Holsteins instead of the mall. It kind of felt like home."

Olsen liked Wright State so much that she stayed in Dayton after graduation to

complete a family medicine residency program. When a faculty position opened in the department near the end of her program, she decided to apply, and she has been with the school ever since.

"I had not planned to stay in the area," Olsen said, but neither did she have any compelling urge to move on, again due largely to her father's influence. In addition to graduate studies that took him all over the country, Olsen's father used his summer breaks from teaching high school to take his family on extended road trips.

"We had this wonderful benefit," Olsen said, "of seeing everything there was to see from the back of a station wagon."

Based on her extensive travels, Olsen said, "I found that central Ohio is actually a very good place to be. The Midwest has a lot to offer in terms of jobs, economy, and the kindness of its people, so I decided to stay put."

The opportunity to become a teacher and mentor in addition to practicing medicine was also impossible to resist, and the role felt natural after so many years of witnessing her father's work with students.

"He thinks that what I'm doing," she said, "in terms of mentoring young family doctors, is just as important as what he did (in developing a breakthrough vaccine), if not more so."



Cynthia Olsen, M.D., enjoys the opportunity to forge long-term relationships with her patients as she cares for them over the course of many years or even decades.

Physicians illustrating the best in patient care

Olsen's decision to enter medicine was based on more than a dislike of full-time laboratory research. Her path was also strongly influenced by an experience with her family doctor when she was hospitalized for a minor procedure while in high school.

"He was an older gentleman, a country doctor," Olsen said. "He came to the bedside and saw me doing my homework, and he wanted to know what I was working on."

"I have longevity with my patients, and continuity. I can sit, talk with them, laugh with them, cry with them. I know their grandkids' names."

Olsen told him about her assignment, a paper on leukemia for her science class. The doctor not only asked to read the paper, but he also complimented her on it and spent several minutes discussing it with her.

"It amazed me that he would spend time with a kid," Olsen said, "not talking about her complaints or upcoming surgery, or doing his 'doctor routine,' but talking about something completely different.

"It was the end of the day," Olsen added. "I knew that he'd spent the whole day in the office, and he was very busy, and he probably hadn't gone home yet for dinner. He was probably tired, but he spent that 10 or 15 minutes talking to me."

In her own practice, Olsen has tried to live up to the selfless standard set by that country doctor with his old-fashioned beside manner. She works to build personal relationships with her patients, and she refuses to let the demands of practice management, administrative duties, or other obligations take priority over patient care.

She was encouraged in this approach early in her education by the example of another exceptional physician: John C. Gillen, M.D. Gillen joined the medical school faculty in 1975, welcomed the school's charter class in 1976, and became chair of family medicine in 1978, a position he held until 1992. His tenure encompassed Olsen's time as a medical student, resident, and new faculty member.

"Dr. Gillen was a huge influence on me," she said. "He espoused many of the traits that a family physician should have. He was someone who talked to his patients. He had a well-grounded knowledge in a broad array of medical topics. He seemed to be very compassionate and nurturing towards younger people and enjoyed mentoring them.

"In many ways," she reflected, "he reminded me of my family physician back home. It was an easy leap for me to choose family medicine, at this school, as my specialty of choice."

Patients who become part of the family

A large part of the appeal of becoming a Wright State faculty member lay in the opportunity to join a practice Olsen had grown to love over the years: the Yellow Springs Family Health Center. She completed a family medicine rotation there as a third-year medical student, visited periodically as a resident at Good Samaritan Hospital, and leapt at the opportunity to return to the center.

"I found it to be a wonderful teaching environment," Olsen said. "The residents were very welcoming, and the patients reminded me of folks back in Madison County. The opportunity to work here felt very much like being at home."

The transition from student to colleague didn't present any serious challenges either, as the family medicine faculty

welcomed Olsen enthusiastically. She still vividly recalls those exciting, early days as a new assistant professor, which sometimes makes it hard to believe they occurred more than two decades ago.

"The Yellow Springs Family Health Center has been my home for 21 years," she said. "It does seem like it's gone fast."

Over the years, both in her interactions with patients and eventually as director of the center, Olsen said she has tried to stay focused on a few important goals.

"I've tried to maintain the friendliness and the hominess that was the personality of the practice," she said, "while increasing the technological advances, both on the practice management side, and also clinical advances."

The first goal is largely accomplished by Olsen herself, who sets the tone for the practice with her tireless dedication to friendly, personal care for every patient.

"All of my work is at the bedside," she said. "In the clinic, at the nursing home, and even home visits for hospice patients and elderly patients who are homebound."

Like the country doctors she admired growing up, Olsen, who lives in Yellow Springs within walking distance of the health center, finds the sacrifice of her time and energy amply repaid.

"I know the people in my community," she said. "I have longevity with my patients, and continuity. I can sit, talk with them, laugh with them, cry with them. I know their grandkids' names. Sometimes I worry about them, which I try not to do, but that happens. That is emotionally rewarding."

Determination in a time of crisis

One thing Olsen hasn't been able to do, however, is halt the relentless march of time. After half a century of continuous

use, the building the health center occupied had developed serious structural problems, and it had inefficient and outdated heating, cooling, and electrical systems that were extremely expensive to operate. In addition, the practice only used about half of the oversized structure.

With the devastating impact of the global economic crisis added to the mix, the practice was forced to shutter the facility in July 2009.

Fortunately, Olsen and her colleagues were able to offer uninterrupted care for patients due to the assistance of Greene Memorial Hospital in nearby Xenia, which set up temporary facilities for the practice in a former emergency room. Being located nine miles away from the original center isn't ideal, especially for patients with limited mobility, but Olsen is proud to still be in business, and grateful for the support that made this possible.

Even so, she insists, the current location "isn't where we want to be permanently. We want to be back home in our community."

"You don't take out the health center that's been there for 50 years and not feel a big vacuum," she added, "and the community is really feeling that loss now."

Olsen's dedication to her patients and community remains as unwavering as ever, though. In fact, she is leading an effort to develop plans to design and build a new and better facility in place of the old one.

"I've made a commitment to the northern part of the county," she said, "and to the people of Yellow Springs in particular, to return their health center to them. I've shared with them my fund-raising plans, my building plans, and I think they're starting to realize that my timeline to have this done is real, that I'm committed to making it happen."

Olsen is infectiously optimistic about the center's prospects for a bright future.

When it returns to Yellow Springs, the center will occupy a modern, energy-efficient, and environmentally friendly 11,500-square-foot facility designed in every detail to meet the needs of patients and their families, and to support the clinical and educational mission of the practice and the medical school.

Initial fund-raising efforts have been going well, Olsen said, and if the trend continues, there should be enough capital to break ground on the new facility in 2010. This would allow the center to return to Yellow Springs in as little as two years, begin a new chapter in its rich history, and enable its vital traditions to survive.

"I have no doubt we will make good on our promise," she said, "and continue to provide outstanding care and essential services for the people of Yellow Springs—yesterday, today, and tomorrow." **VS**



A Closer Look



Learning from Katrina

Gulf Coast calamity inspires Calamityville

Cindy Young

The parking lot of the Gulf Islands Water Park off of I-10 in Gulfport, Mississippi, is an unlikely spot for inspiration. But in the sweltering heat and humidity in late August 2005, just days after Hurricane Katrina made landfall, the parking lot was where Mark Gebhart and Jim Gruenberg would meet to swap stories about the dysfunction they saw daily as emergency responders helping in the rescue efforts.

They knew there had to be a better way. Gebhart and Gruenberg knew each other from their days with the Kettering Fire Department, where Gebhart had served as medical director and Gruenberg as a captain. Both were dispatched to Gulfport as part of the federal response to the disaster. Mark Gebhart, M.D. ('97), CPM, was the medical team manager for

Ohio Task Force One, a 35-member urban search and rescue team with the Federal Emergency Management Agency (FEMA). He was responsible for the health of the team and its four rescue dogs. Jim Gruenberg, EMT-P, CPM, and formerly a task force leader with Ohio Task Force One, was deployed as the executive officer for the operations section chief of FEMA's incident support team in Mississippi.

It was just dumb luck

Gebhart and Gruenberg saw firsthand the lack of coordination and technology that became an infamous hallmark of the nation's response to the disaster.

"We rescued one person," Gebhart said. "And it was because we stumbled into her. A multimillion-dollar federal urban search and rescue team had no better technology than BlackBerries that didn't work and tri-fold park maps of the community. Here we find this 85-year-old lady standing knee-deep in water in her house. No sensors found her. It was just dumb luck."

With the skies filled with helicopters and planes, "it looked like everybody was doing something," Gebhart said. "But the whole guidance, the command and control, was really disconnected. And it was at every level, whether it was fire, medical search and rescue, right down to the utilities people. It was all a totally uncoordinated mess."

A lack of basic supplies also hindered their efforts. They had plenty of water, but no access to salt, which is vital in hot, humid conditions.

"We were putting people in the hospital because they were getting delusional hyponatremia," said Gebhart. "The only way we could get salt was to drink hot sauce that we found in a grocery store that had been destroyed."

Gruenberg, a former NYC firefighter who has been deployed to 13 missions, including the World Trade Center following 9/11, saw a problem with the searches. When missing person reports would come into the coroner's office, Gruenberg would be asked if a particular neighborhood had been searched. There was no way for him to tell.

"The elite search and rescue teams of the United States of America could not quantify or qualify their performance," he said. They had never dealt with the scope and scale of searches in 95 percent humidity at 95-degree-Fahrenheit temperatures. Gruenberg saw a profound need for training in realistic environments to prepare responders for the actual conditions they will face during search and rescue missions.

Vision becomes reality

In the parking lot, Gebhart and Gruenberg developed a shared vision for a better way. Four years later, their vision became a reality on September 28, 2009, when Wright State University and the city of Fairborn broke ground on the National Center for Medical Readiness Tactical Laboratory (NCOMR-TL) at Calamityville. Today, Gebhart serves as NCOMR director and Gruenberg as assistant director for human access care and evacuation.

The Boonshoft School of Medicine Department of Emergency Medicine, where Gebhart serves as an associate professor, created the Homeland Emergency Learning and Preparedness (HELP) Center in June 2005, two months before Katrina slammed into the Gulf coast. Its mission was to become an internationally recognized center of excellence in disaster preparedness and medical readiness. But it lacked a tactical laboratory, where all responders could come together to train in a realistic environment.

Working closely with then chair of emergency medicine, Glenn Hamilton, M.D., they crystallized their plans for Calamityville, which will eventually include:

- Large, high-profile commercial and residential debris fields
- Six-story building simulation platforms, including both interior and exterior patient evacuation capability
- A ground transportation mishap area, replete with rail and various vehicle crash scenarios and props
- Above- and below-ground confined space simulators
- Interior and exterior hazardous materials simulators and spill area
- A 20,000-square-foot training and simulation building for classroom and patient simulation use
- Acres of open area for mobile command posts, base of operations set-up, and exercises
- Offices, conference areas, and research laboratory space
- An integrated sensors array to identify and track groups for command and control, and individuals for physiologic status in the simulated environment

“A multimillion-dollar federal urban search and rescue team had no better technology than BlackBerries that didn't work and tri-fold park maps...”

"As a training site and research test-bed, the tactical laboratory at Calamityville will help prepare the civilian and military medical communities to participate and react effectively together and with traditional disaster responders," said Hamilton, now the executive director of NCOMR and professor of emergency



medicine. “This will provide a more complete approach to finding patients, offering initial care, and safely evacuating them from disaster sites. It will also serve as the site where the health care system, including hospitals, can research and identify best practices during highly stressful events. The tactical laboratory will be the first site in the United States to fully integrate the civilian and military medical and non-medical responses that occur in a disaster or other complex rescue situation.”

The global building materials company CEMEX donated the facility and surrounding 54-acre property to Fairborn in June 2009 to serve as the future site of the NCMR-TL. The project has garnered more than \$13 million in state and federal support to fund the Phase I development of the NCMR-TL.

Connecting the dots

“Calamityville helps connect the dots,” said Gebhart. “People can experience these things in a very realistic simulated environment before they’re ever thrown into that for real. At Calamityville, you can push the stop, the start, and the pause button. If you push the pause button as the dots are not being connected, you have the opportunity to show people what went wrong.” Disaster training often fails because it’s not realistic. Tabletop exercises are typically held from 9 a.m. to 4 p.m., with breaks for coffee and a nice box lunch.

“When we went to Hurricane Katrina, we had no earthly idea where a coffee pot would be,” said Gebhart. “And whatever was for lunch was in your backpack. So the realism in these events is very, very important.”

Gebhart envisions around-the-clock exercises running up to four days at a time that are meant to stress the participants, showing them what it’s like

to work under extreme pressure. To improve emergency response at all levels, from the EMT to the ER physician, up through the command and control structure, the laboratory will develop individual training for each group and bring them all together for a culminating exercise at the end of the week.

In 2008, the HELP Center underwent a name change and became the National Center for Medical Readiness to better reflect its medical mission. Building on research and the experience at Katrina, NCMR plans to focus on five critical areas:

Emergency and disaster medicine

Current training often focuses on how to extract an injured person from a collapsed building or other difficult environment, but it does not always address the best medical care for the patient. The center will train physicians and nurses to go into difficult situations to guide the rescue from a medical perspective.

Human effectiveness

NCMR will be researching how to identify those best-suited to make life-saving decisions in a disaster situation, how best to get critical information to command and control, and the effects of extreme fatigue and the emotional challenges facing first responders. The relocation of the U.S. Air Force’s 711th Human Performance Wing to Wright-Patterson Air Force Base brings new opportunities for military and civilian collaboration.

In July 2009, the Air Force Research Laboratory awarded Wright State \$2.7 million to enhance collaboration between the Air Force School of Aerospace Medicine and NCMR. The award supports the development of the NCMR-TL and provides education,

research, and development projects in disaster response and medical readiness.

Sensors technology

The conditions after Katrina were so horrific that rescuers sometimes just gave up.

“We need to apply technologies that eliminate the human in some cases where the human cannot perform, and even on a good day, are unlikely to find what they’re sent to find,” Gruenberg said.

The center will explore technologies to remotely detect victims in a disaster, evaluate their life signs, and detect hazardous materials and biological threats.

Information technologies and systems engineering

The center will work to strengthen information sharing and collaboration during emergencies and explore ways to apply military methodology to enhance civilian command and control during disasters.

Logistics and supply chain management

After Katrina, resource managers were unable to determine what resources were needed, which were available, and where they were at any given point in time. NCMR is already helping to find solutions with its Modular Emergency Medical System (MEMS). MEMS was established to expand a community’s surge capacity for patient care during a disaster. MEMS consists of 250-bed Acute Care Centers (ACC) and 1,000-bed Neighborhood Emergency Help Centers (NEHC).

An ACC can be located near a hospital to facilitate the transfer and referral of patients, while the NEHC was developed to provide evaluation and treatment for 1,000 patients a day. Each ACC or

NEHC fits into a 53-foot semi-trailer and includes everything physicians need, including hospital beds, computer systems, generators, medical supplies, and food. The Ohio Department of Health (ODH), with funding from the U.S. Assistant Secretary for Preparedness and Response in the Department of Health and Human Services, has designated regions statewide for the initial pilot program and for ACC implementation sites. MEMS has been transformed into a working plan for the Northwest, Southeast, and West Central regions of Ohio, becoming a model that can be replicated throughout the state of Ohio and beyond.

The center is already serving as a test-bed for new and improved technologies.

“We found in developing the surge capacity project that there wasn’t an adequate portable hospital bed,” Gebhart said. “So we talked with an Ohio-based business about that, and they developed a surge capacity bed.”

Following the devastating earthquake in Haiti, the NCMR team was placed on alert status by Ohio Governor Ted Strickland and ODH for possible deployment to Haiti to set up a 500-bed field hospital to care for the injured.

The nation needs emergency leaders, not emergency managers said Gruenberg.

“Management is a skill set that’s very vulnerable, because it’s only as good as the bureaucracy that supports it,” he said. “I hope we start raising a generation of emergency leaders who have courage to go beyond the management phase and into making very difficult, but very important, decisions.” **VS**

For more information, visit medicalreadiness.org

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1,000 Words

When she learned she will be heading to Yale for residency training, fourth-year medical student Lindsay Gates was so ecstatic she had to celebrate the emotional moment with her husband, Phil Santinoceto. Along with 85 of her classmates (and more than 16,000 other medical students nationwide), Gates learned on Match Day in March where she will take the next big step in her medical training. Following her graduation in May, Gates will become a vascular surgery resident at Yale University/ Yale New Haven Hospital.

Photo by William Jones





Lindsay Gates
Surgery

Telemedicine for the rest of us: Justin Fox proves the power of low-tech, low-budget solutions

When Justin Fox, M.D., left community college to enlist in the Air Force at age 18, he had no intention of going back, let alone enrolling in medical school.

“I volunteered at a hospital when I was in 7th or 8th grade,” Fox said, “and I hated it. I never thought medicine was something I was going to pursue.”

A little more than 10 years later, Fox is wrapping up his third year as a surgical resident at Wright State, and this summer he will begin a prestigious two-year research fellowship at Yale University as one of just 29 Robert Wood Johnson Foundation Clinical Scholars nationwide.

At first glance, the path Fox has traveled to this unexpected point, early in a promising career as a surgeon and researcher, has been wandering and largely unplanned. Look a little deeper, though, and it becomes clear that his steps have always been guided by a keen eye for opportunity, a knack for innovation, and willingness to ask, “Why not?”

A beginner’s guide to the body (from the neck down)

Ten months into his military service, while stationed in Okinawa, Japan, Fox decided to give college another try. After taking a few classes abroad, Fox was granted leave to enroll in the University of Pittsburgh. After graduation, he was accepted to the F. Edward Hébert School of Medicine of the Uniformed Services University (USU) of the Health Sciences.

The USU medical school covers anatomy through two courses: neural (head and neck) and gross (everything below the neck). While the neural course incorporated an interactive CD-ROM, the gross course didn’t have a similar resource. Fox wondered if he might be able to do something about the discrepancy.

The course director, Alan Seyfer, M.D., FACS, “was incredibly supportive,” Fox said, and based on some demos Fox had developed, they put together a plan. Over the summer, Fox and a team of seven other students covered the entire anatomy course, dissecting two cadavers, photographing all of the key structures, and labeling and organizing the images for use on the CD, which the medical school still uses.

While he was proud of what he and his team were able to accomplish, Fox had no idea how important the project would prove to be to him.

“A lot of what has happened to me in medical school, and now into residency,” he said, “has stemmed in some way from that project.”

Publications, posters, and projects on the cutting edge

Based on the success of the anatomy CD, Seyfer asked Fox to help him digitize old clinical slides and work on publishing a case series.


“I like to write, and this was an outlet to write,” Fox said. “It taught me how to write for the medical literature, which was incredibly enlightening.”

Another benefit was the opportunity to be listed as co-author on nearly two dozen articles, many in major medical journals. At the same time, Fox was invited to present his anatomy CD project at an American Medical Student Association conference in Chicago. While there, he met a USU graduate student working on a series of first aid books for McGraw-Hill. The student asked Fox to join the project, and he ended up serving as an editor for the series, which was published in late 2008 and includes both basic clinical manuals and board preparation guides.

As word spread about Fox’s work, other professors began to approach him. The most influential of these potential collaborators turned out to be Lt. Col. Raymond Harshbarger, M.D., a plastic surgeon at the Walter Reed Army Medical Center.

Harshbarger specialized in pediatric craniofacial reconstruction and had done medical missions to Vietnam, Africa, South America, and the Caribbean during his residency training. As a military surgeon, he was focused on craniofacial reconstruction for soldiers wounded in Iraq and Afghanistan, often using innovative 3D computer modeling and advanced materials.

“He had this series of several hundred patients he’d seen,” Fox said, “and the Department of Defense had no way to track them. This is groundbreaking stuff, and nobody was archiving it to say, ‘Does it work? Does it not? Should this be extrapolated to civilian surgery?’”

A close-up, side-profile photograph of a surgeon in an operating room. The surgeon is wearing a blue patterned scrub cap with yellow and white floral designs, a white surgical mask covering the lower half of their face, and blue surgical scrubs. They are looking down intently at a patient, whose face is partially visible on the left side of the frame. The background shows a tiled wall and some medical equipment, creating a clinical atmosphere.

Fox began working with Harshbarger to develop a case database, and an important new partnership was formed.

The limitations of medical missions

During his final year of medical school, Fox joined Harshbarger on a two-week medical mission to the Dominican Republic. Perhaps inspired by his earlier work tracking Harshbarger's patients, he began thinking about new and better ways to prepare for and follow up with patients served during medical missions abroad.

Typically, Fox said, "you advertise for patients before you get there. You get there and you might see 80 or 100 patients the first day and decide who you're going to operate on, and who you can't."

Because surgeons have to bring much of their specialized equipment with them, some patients will have conditions they aren't equipped to treat. Others might be sick at the time or have other complicating issues.

"You're left with maybe 30 to 50 patients," Fox said, "and you set up your surgical case flow."

"The patients you operate on the first week," he said, "you see back the following week. The patients you operate on the second week, you never see back."

This gap in care troubled Fox.

"What do you do if the patients have complications?" he wondered. "You go into areas to help because they have poor access to medical care, or at least the care you have to offer. If you leave them with complications, you're kind of setting the system back."

The lack of follow-up care, coupled with the haphazard nature of the patient selection process, hardly seemed ideal. Fox was convinced there had to be a better way.

Justin Fox, M.D., assists with surgery to repair a patient's cleft lip during a medical mission to the Dominican Republic.

Global health on the World Wide Web

Based on his experiences with the interactive anatomy CD, Seyfer's digital image archive, and Harshbarger's case database, Fox believed technology might be able to help extend the reach of U.S.-based physicians. Some initial research into telemedicine turned up a few possibilities, but all were new, limited, and very expensive. Then Fox read about

“I don't think I'm that tech-savvy. I've just found ways to utilize what already exists.”

scientists using simple Internet wikis for remote collaboration.

“I thought, ‘If they can use it for basic science research, we could use it for clinical medicine.’”

Fox had no funding so he found a free service that would let him create a secure online wiki, with encrypted data, password protection, and various levels of access and permission. He then gathered several borrowed or donated digital cameras and laptop computers, took them with him to the Dominican Republic, and began documenting cases.

“I took pictures pre-op, during the operation, and after for the first week,” he said. “We followed the patients and created a medical chart, basically, through the wiki.”

Fox also taught surgical residents in the Dominican hospital to use the wiki. Six weeks later, the residents met with the patients again, took notes on their condition, shot new photos, and uploaded everything to the wiki for the surgeons in the U.S. to review.

“We could see how they were doing post-operatively while we were still in the States, record complication rates, and advise the patients,” Fox said. Fortunately,

“we found very low complication rates. Basically, we proved we were able to do this safely.”

Bringing international telemedicine back home

After joining the surgical residency program at Wright State in 2008, Fox presented his work to the American Cleft Palate Craniofacial Association. That year he was also awarded a \$2,500 Resident Research Grant by the Dayton Area Graduate Medical Education Consortium (DAGMEC). The grant covered the cost of laptops and cameras for clinical sites in Santiago and Santo Domingo. Fox worked remotely to train local health care personnel to use the equipment and upload information and images to the wiki.

“We had about 15 patients we were able to pre-screen and operate on,” Fox said, “in addition to those we saw and screened when we got there.”

The importance of the project, Fox said, was that “we showed it could be done with minimal technology. Three to four years ago, this was very specialized and expensive. Now we're doing it wireless with a \$100 camera and a laptop that was \$400, and we're able to see enough to treat patients.”

Fox hopes to bring his homemade solution to a global health problem full-circle and benefit patients in the Dayton area. Because local hospitals are often regional treatment centers for various medical conditions, they may serve patients who live several hours away. Closer to home, some patients in long-term care facilities need to be transported by ambulance for routine medical visits, a costly and time-consuming process.

“I thought if we could incorporate some kind of telemedicine here,” Fox said, “it might help avoid unnecessary transfers, which could reduce health care costs and still allow us to offer quality care.”

In May 2008, Fox earned a \$10,000 grant through Miami Valley Hospital to expand on his work with the Virtual Outreach wiki to create customized software and a regional wiki focused on wound care services. The new wiki is now largely in place, and Fox will present his preliminary work to the American Telemedicine Association later this year. He is also working to partner with a nursing home or rehabilitation center to put the solution into practice.

New and exciting opportunities

As he looks ahead to the start of his research fellowship in July, Fox is excited about devoting two years to his telemedicine work before returning for the final two years of his residency program. After completing the program, he will owe the Air Force 13 years of additional service, but he isn't worried about the commitment. On the contrary, he is confident that new and exciting opportunities will continue to arise.

“Ten years ago when I enlisted in the military,” he said, “I had no intention of doing any of this.”

In fact, he added, “I don't think I'm that tech-savvy. I've just found ways to utilize what already exists.”

His experience, he believes, can be informative for others who may feel excluded from appealing opportunities, especially in the area of telemedicine.

“You don't have to be some big institution and have a lot of money to be able to participate in this,” he said. “Even local community hospitals or nursing homes, or places with smaller budgets, can still incorporate telemedicine without necessarily spending a fortune to do it.” **VS**

For more information, visit med.wright.edu/surg/vo

Research Spotlight



Sometimes the most effective approach to research is simply to take a closer look at existing data and analyze it in new ways.

This is exactly the strategy Sara Paton, Ph.D., employed when called on to lead an investigation into alarmingly high breast cancer rates in Madison County, Ohio.

Paton is an assistant professor of community health with the medical school's Center for Global Health Systems, Management, and Policy and an epidemiologist with Public Health—Dayton and Montgomery County. She was supported in the research by Marietta A. Orlowski, Ph.D., an associate professor of community health and of health, physical education, and recreation, and Sylvia Ellison, M.A., a research assistant with the center.

The need for the study became clear in 2007 when data from the U.S. Centers for Disease Control and Prevention (CDC) indicated that the incidence and severity of breast cancer in the county from 2001-2003 were the highest in Ohio, as well as being substantially higher than the national average. When state Senator Chris Widener, who was a state representative at the time, learned of the CDC data, he contacted officials

Study identifies the truth behind a misleading medical crisis

at Wright State about investigating the problem. In response, University President David R. Hopkins, P.E.D., commissioned the study by Paton and her colleagues.

The first step in conducting the study, Paton explained, was to collect data from additional sources covering a longer span of time. In particular, she reviewed data from the Ohio Department of Health, the CDC, and the Ohio Cancer Incidence Surveillance System.

“We were able to look at all the breast cancer patients in Madison County from 1996 through 2006,” Paton said, “and do data analysis for those women, looking at descriptive factors and incidence and mortality.”

Paton then compared the numbers to those of five similar Ohio counties, the state as a whole, and the overall U.S. population. What she found was quite gratifying.

“For incidence, breast cancer in Madison County is actually very low,” Paton said. “We also looked at overall cancer and saw the same trend. Incidence of any type of cancer is low in this area.”

The fact that a more expansive, longer-term study yielded such different results didn't surprise Paton.

“It's a small county with a small number of cases,” she said. “This means that incidence varies a lot, year by year. There are maybe 20 cases a year, so the incidence could increase by 50 percent, and you're really only adding five to 10

additional cases. With the data they were looking at originally, they picked one or two points, and they looked high.”

While any rise in the incidence or severity of cancer is lamentable, a handful of additional cases over the course of a few years can easily be due to natural variation and may not indicate a serious public health problem. Just to be sure, Paton and her team also mapped the data.

“Most cases are in the most populated areas,” she said, “which is what you would expect. There isn't any indication this is an environmental issue.”

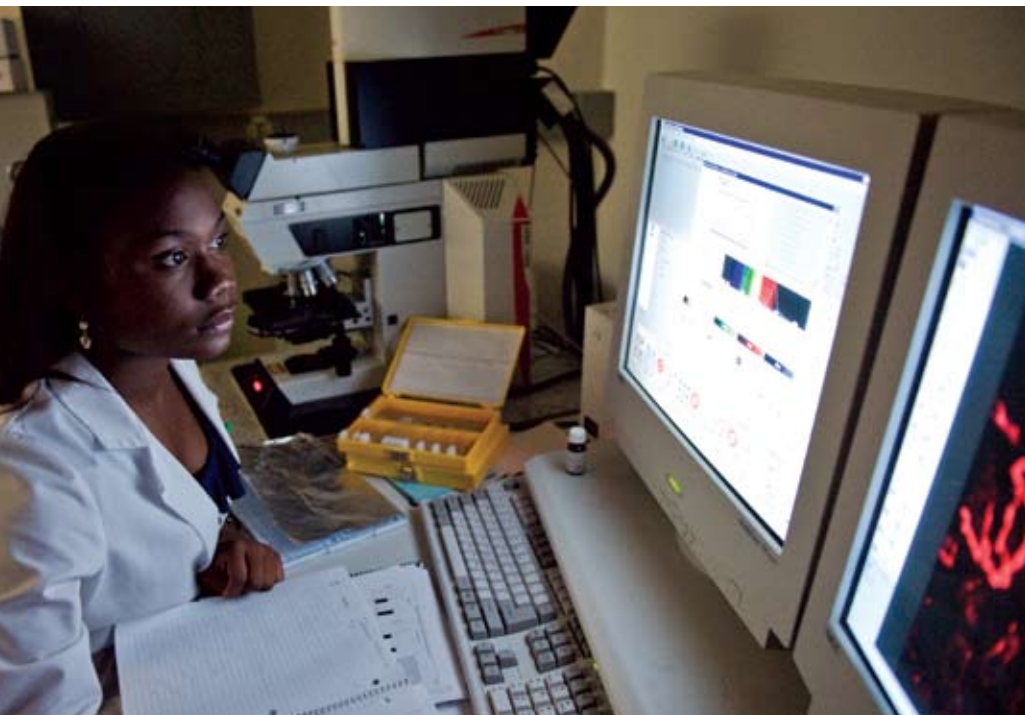
Unfortunately, the data also showed that while Madison County has a low incidence of cancer, the mortality rate is high. Mortality decreased significantly toward the end of the study period, based on data from 2005-2007, but it's too early to consider the matter resolved.

“Is the low number a blip, or the start of a long-term trend?” Paton said. “We need a few more data points to say.”

With breast cancer, the timing of diagnosis can make a big difference. The study revealed that women in Madison County with breast cancer tend to be diagnosed at later stages. While the reasons for this are uncertain, it is clear that efforts to raise public awareness, promote prevention, and encourage women to do breast self-exams and get mammograms could have a positive impact. **VS**

Research Spotlight

Tomorrow's scientists working on campus today



Student Chioma Anokwute analyzes pathology samples while conducting diabetes research in the lab of faculty mentor Khalid Elased, R.Ph., Ph.D. Anokwute hopes to become a cardiothoracic surgeon, and based on her STREAMS experience, the Boonshoft School of Medicine will be one of her top choices for medical school.

When identifying reasons for their success, scientists often cite the influence of an encouraging mentor or a formative experience in the classroom or laboratory.

For more than 15 years, a groundbreaking program at the Boonshoft School of Medicine has sought to provide promising young students with both.

Each summer, college students from across the country come to Wright State for a unique opportunity to spend two months engaged in intensive, hands-on scientific research. The STREAMS program was created in 1994 to encourage

members of underrepresented minorities to pursue careers in biomedical research. Today, the program is funded by a grant from the National Heart, Lung, and Blood Institute of the National Institutes of Health (NIH) and is open to students with disabilities as well. In early 2010, the NIH awarded nearly \$650,000 to fund the program through 2014.

During the program, participants spend eight hours per day working with faculty mentors in a university laboratory, reading and presenting scientific literature, or preparing posters on their work for a faculty-judged research

symposium held at the end of the summer. For their efforts, students receive graded laboratory and classroom credit, an hourly wage, and housing on campus.

As part of the program, students also receive career counseling, attend seminars and lectures by faculty and guests, and participate in special events, such as a trip to the Cincinnati headquarters of Procter & Gamble to tour the company's research facilities. When Nobel Laureate Oliver Smithies, D.Phil., visited campus in July 2009, the STREAMS students attended his lecture and then met with the renowned scientist for a personal conversation.

"It's a wonderful program, because the students get exposure to so many different things," said Mariana Morris, Ph.D., who is co-director of STREAMS, as well as vice president for graduate studies and chair and professor of pharmacology and toxicology. Each year, Morris also serves as a STREAMS mentor.

"I love having the students in the lab," she said. "It's just refreshing to have someone younger, at the undergraduate level, and really see their excitement as they're able to achieve something."

A head start on the path to scientific success

It is also gratifying, Morris said, to witness the ways various students build on their STREAMS experiences. Many

return for a second year, and a significant number go on to pursue graduate studies in medicine or science, often en route to careers in biomedical research.

While not every STREAMS graduate follows this path, the program nevertheless serves them well, according to Romena Holbert, M.S., assistant director for 2009.

“I think it’s a fabulous experience for the students, even for those who don’t end up going on into research,” Holbert said. “They’re still learning about interacting with other people, professionalism, preparing themselves for presentations and conferences, the scientific method, and being explicit in detailing processes and diligent in analysis.”

Holbert, herself, is a perfect case in point. A high school biology teacher in Xenia, she earned bachelor’s and master’s degrees from Wright State and is now pursuing a doctorate in education at the Ohio State University—all following her experience as a STREAMS student in 1999.

“I’m excited to be back, because it gives me a totally different perspective on the program,” Holbert said. “The teamwork is fabulous. Everybody that I’ve spoken to here has solidified my belief that Wright State is the place to be.”

Giving star students a chance to shine

In 2009, the program drew 16 students from schools throughout Ohio, as well as colleges as far away as Illinois, North Carolina, and Puerto Rico. They worked with faculty mentors from diverse departments, including family medicine, surgery, pharmacology and toxicology, and neuroscience, cell biology, and physiology.

Chioma Anokwute, a junior at Indiana University Northwest, in Gary, Indiana, hopes to add to the program’s tradition



Wright State undergrad Jacob Brewer presents his work during the STREAMS research symposium at the end of the summer program. Brewer plans to continue his research with faculty mentor John Flach, Ph.D., as he works toward earning a Ph.D. in human factors and industrial/organizational psychology.

of graduates who go on to success in biomedical fields. A biology and psychology major with a minor in chemistry, Anokwute has spent her summers shadowing physicians and serving as a research lab assistant while working toward her goal of becoming a cardiothoracic surgeon. At Wright State, she was paired with faculty mentor Khalid Elased, R.Ph., Ph.D., assistant professor of pharmacology and toxicology. She was thrilled to join his team conducting research on diabetes, which she also studied last summer.

“This is practically a continuation for me,” she said. “What I really love about his lab is that he’s making me read the literature and learn about it. What I did last summer was just work in the lab—someone taught me skills and expected me to do something. In this case, it’s more in-depth.”

Her STREAMS experience was so positive, in fact, that Anokwute said the Boonshoft School of Medicine will be one of her top choices when she applies to medical school. Her application will

have to wait a little longer than expected, though, because she was accepted for a Wright State-sponsored semester-long exchange program with a university in Brazil, an opportunity she learned about through STREAMS.

The delay doesn’t bother her, however, because she is already far ahead of most students her age: Anokwute turned 19 shortly after completing her junior year in college. She began getting a leg up on her education in Nigeria, where she spent her early childhood. Despite missing a year of school due to a variety of serious illnesses, she quickly made up for lost time, and when she and her mother and five siblings followed her father, a retired petroleum engineer who entered the ministry, to the United States, she was ready to begin high school at the age of 12.

Four years later, she graduated as valedictorian and entered college, where she has experienced similar success. In addition to managing a double major and her minor in chemistry, she has served as president of the pre-med club, founded a group to organize community

Research Spotlight

volunteer activities (another passion of hers), and even agreed to teach anatomy and physiology discussions.

In contrast, her STREAMS summer at Wright State allowed her to focus wholly on her research. With Elased, Anokwute conducted pathology studies using a mouse model of type II diabetes. She

“I really think programs like this have the potential to improve things, not just locally, but nationally and worldwide.”

examined pancreas, heart, liver, kidney, and brain samples to evaluate disease progression in control, diabetic, and treatment groups incorporating two different medications. The long hours reading journal articles and examining samples under the microscope paid off, as Anokwute ended up taking first prize in the STREAMS research symposium at the end of the summer—just a few weeks before she left for Brazil.

An outstanding opportunity close to home

As a Wright State freshman, Jacob Brewer didn't have to travel far to participate in STREAMS. A psychology major with an emphasis on engineering, Brewer is interested in human factors research to explore how people interact with their environment.

“I thought it would be a great learning experience to get some hands-on research experience in the laboratory,” Brewer said. “It was definitely a great opportunity to see what research in the field is all about, rather than just reading about it in a book.”

Based on his interests, Brewer was thrilled to be paired with John Flach, Ph.D., professor and chair of psychology. Their research involves Brainfingers, a brain-computer interface developed by Andrew Junker, Ph.D., founder of Brain Actuated Technologies in Yellow Springs.

“What this allows us to do,” Brewer said, “is actually use brain waves and muscles in the face and eyes to control a computer.”

The technology was designed for video gaming, Brewer said, but its potential to help people with disabilities, and particularly locked-in individuals with complete bodily paralysis, soon became clear. Exploring that potential was the focus of his STREAMS research.

“We wanted to figure out if there was a way to use this as a tool for communication,” he said.

Although Junker had released an application package for this purpose, it was very rudimentary and largely untested.

“The software is still in development,” Brewer said, which is where the laboratory work came in. “At first, we had a lot of problems with fine control.”

Eventually, Brewer tried using a software function called “auto hot keys” to link tiny muscle movements to directional commands, enabling better control of the computer mouse. He and the team shared this approach with Junker.

“He was very happy about the idea,” Brewer said, “because he had been trying to solve a similar problem. The thing I had set up was pretty crude, but he was able to show me how to use the functions of his software and make it work better.”

Brewer said the next steps will be studying and refining the software to maximize performance and explore specific applications. The scope of this work will extend well beyond a single summer, but he plans to stay involved by working in the lab as he continues his undergraduate studies.

“I've already got a start on what I'm going to do for my undergraduate paper for departmental honors,” he said.

Brewer knows all of his hard work now will help him achieve his ultimate goals more quickly. He hopes to remain at Wright State to pursue a Ph.D. in human factors and industrial/organizational psychology, and then to design accessibility devices to help address communication barriers.

Although Brewer's work over the summer was just a starting point, it caught the attention of the Ohio STEM (Science, Technology, Engineering, and Math) Ability Alliance (OSAA), which invited him to present at a research symposium at the Ohio State University. Although it meant finishing his STREAMS poster earlier than expected, Brewer was glad he made the extra effort, which impressed the symposium hosts and earned him an invitation to return.

“STREAMS is definitely a great program,” he said. “I hope other colleges will really start participating in the idea of getting minorities and students with disabilities involved in research. I really think programs like this have the potential to improve things, not just locally, but nationally and worldwide.” **VS**

For more information, including applications for the 2010 STREAMS program, visit med.wright.edu/streams/

New collaboration to advance biomedical research

When James Lucot, Ph.D., oversaw the work of undergraduate David Helton in his laboratory in the early 1980s, he admired Helton's intelligence and self-motivation.

He never imagined that two decades later, Helton would found a biomedical research company and approach his former mentor to establish a novel and very promising partnership.

"Typically, when we interact with business, it's fee-for-service. We pay them for something, or they pay us for data," said Lucot, now a professor of pharmacology and toxicology and director of the medical school's Dilute Nerve Agent Facility.

In contrast, a new agreement between Wright State and Cenomed Research, the company Helton founded, establishes a much more cooperative and wide-ranging working relationship.

"This is a collaborative effort in which the company and the university co-develop and co-own (new drugs)," Lucot said. "We will share patents, royalties, bonuses for meeting government contract milestones—with this kind of arrangement, we benefit from all of the additional income from success."

In addition to long-term profit potential, the agreement allows each partner to draw on the specific strengths and capabilities of the other. For example, Lucot's lab is one of only a handful in the nation certified by the government to perform certain types of studies involving

chemical warfare agents. A primary initial focus of the collaborative research will be to develop more effective central nervous system-active drugs to treat patients poisoned by such substances.

"The treatment for chemical warfare agents has been around, unchanged basically, for 40 years," Lucot said.

He hopes his research with Helton will lead to significant improvements in two of the three components involved in treating people exposed to nerve agents, which are also key to treating pesticide exposure. Assuming their efforts bear fruit, the partnership should allow Lucot and Helton to develop, test, and bring new drugs to market much more quickly than they could otherwise, possibly within three to four years.

The accelerated timeline is possible because of the expertise, perspective, and resources Helton brings to the partnership. For example, he knows which vendors to approach to obtain critical components such as synthesized molecules to study directed motor receptor mechanisms. He also has a detailed understanding of the U.S. Food and Drug Administration's needs and processes, and he enables Lucot's lab to compete for government research grants that require industry involvement.

Building on the initial agreement, Helton also hopes to establish new private research labs in Ohio, attract venture capital, and apply for an Ohio Third Frontier grant. Doing so would mean setting firm goals to create approximately 80 new jobs and produce a drug that could earn FDA approval to commence clinical trials within three to five years.

This kind of ambitious effort is possible, in large part, because Helton and Lucot worked with Jack Bantle, Ph.D., Wright State's vice president for research and graduate studies, to make the agreement flexible enough to allow the partners to pursue new opportunities together quickly and easily.

"Whenever something comes down the road, we just add an amendment," Lucot explained.

In addition to the many benefits to his research, Lucot has personally enjoyed reconnecting with his former student and learning about his success since those early days in the laboratory. Their shared history is a big part of what makes the agreement effective, Lucot believes.

"There has to be trust on both sides," he said, and having that early experience in common "really increases the level of trust from the get-go."

In fact, he added, even after so much time, "it's amazing how much we think alike. He reminded me of some valuable lessons that I had lost track of."

Lucot admits that two decades in environments as different as industry and academia have certainly had their impact, but he considers their varied experience and perspectives an advantage.

"We sort of balance each other out in terms of our enthusiasm versus focus," he said. **VS**

Research Spotlight

Lifespan Health Research Center takes the long view 80 years of data lead to more questions

What makes people different?

It sounds like a simple question. But eight decades after Arthur Morgan, then president of Antioch College in Yellow Springs, first posed the question, the answer remains as elusive as ever.

Morgan thought a longitudinal study of people from birth to adulthood would help solve the mystery, so in 1929 he contacted Samuel Fels, a Philadelphia businessman and philanthropist. Fels agreed to fund the project, and the Fels Longitudinal Study was born.

In 1977, the study became part of the Boonshoft School of Medicine, eventually finding a home in the Lifespan Health Research Center (LHRC) in the Department of Community Health.

Now in its 81st year, the study is the longest

continually running study of its kind in the nation. Beginning in 1929, pregnant women were recruited from the area around Yellow Springs, where the study was located. The babies born to those first mothers are now entering their ninth decade. At regular intervals throughout their lives, the participants have been

meticulously measured to record growth and maturation, body composition, risk factors for cardiovascular disease, and more. Today, nearly 1,200 individuals are part of the ongoing study, and records are available for the 2,700 individuals who have been part of the study since its inception.

A complex dance

It turns out that what makes people different is a complex dance between genetics and environment. As researchers sifted through mounds of data on what makes each of us unique, they found that subtle environmental nudges during childhood can magnify genetic tendencies and have far-reaching effects on an individual decades later in life.

turning into septuagenarians and octogenarians, and we see if we can identify precursors in early life that affect adulthood health.”

Unlike many similar studies, the Fels Study has a unique population, because it is family-based. As the study went on, relatives of the original mothers were added, which is paying dividends now that the human genome has been mapped.

“The family structure has been maintained for most of the study,” said Sherwood. “And that is allowing us to do a lot of genetic work using modern-day statistical genetic techniques.”

The 16-member team has been exploring a broad spectrum of human growth and

“We can look at the history of these people,” said Richard Sherwood, Ph.D., director of the LHRC and associate professor of community health. “We look at their childhood and early adulthood, and now look at their health as they’re

development, from how genes regulate body fat and the associated risks for cardiovascular disease, to skeletal growth and maturation in children, to an analysis of osteoporosis risk factors—and more.

Looking at the big picture

Often when researchers decide to study the cause of a disease such as heart disease, they recruit a group of people afflicted with the condition. But that approach can be limiting. In contrast, the Fels Study gives a snapshot of the normal population.

“That actually gives us the flexibility to look at a variety of different things,” said Stefan Czerwinski, Ph.D., associate professor of community health. At Lifespan, “we’re doing craniofacial genetics, we’re doing osteoporosis, bone growth during childhood, obesity, and heart disease. All of those things are done, because we have cohorts that have not been recruited based on a single disease.”

According to Sherwood, much of the research appears to overlap.

“If you’re obese as a child, it affects growth hormone, so it can affect your growth, which is going to affect not only height, but skeletal maturation,” he said. “We think about this as one giant system with all these interrelated parts. We can start to tease out and look at the trait of interest, and also look at the co-variants that are affecting that. And then do that over the span of an individual’s lifetime.”

The growing epidemic of obesity and its effect on health has been much publicized. LHRC researchers are uniquely positioned to study the trend.

“In analyzing our obesity data, we have noticed that the latest generation, people born in the ’80s, tends to be much more obese than any of the previous generations,” said Czerwinski.

But researchers are finding it’s not just body fat that’s the problem—it’s the type

of fat and where it’s located in the body. Visceral fat that envelops the organs deep in the abdomen is much more metabolically active than subcutaneous fat located throughout the body under the skin.

“If you have higher amounts of visceral fat, then you’re likely to have a whole cascade of effects that include increased inflammation, increased effects on lipid metabolism, and accumulation of fat in your liver, all of which leads to metabolic syndrome and risk for diabetes and heart disease,” said Czerwinski.

One common measure of visceral fat is waist circumference, but Czerwinski and his colleagues have shown that’s not always a reliable indicator.

“Over the last few years, we have developed a protocol to actually quantify the amount of fat in the viscera using MRI and separating the subcutaneous adipose tissue apart from the visceral adipose tissue,” Czerwinski said.

With this method, they have found that people with the same waist circumference can have vastly different amounts of fat stored in the viscera.

“Heights and weights are good, they’re growth indicators,” Czerwinski said, “but these more refined measurements are better at being able to predict later risk.”

The genetics of osteoporosis

Scientists have long known that osteoporosis has a strong genetic component. The LHRC researchers want to determine which specific genes play a role in bone loss.

“We’re actually measuring people from 18 all the way up into their 90s,” Czerwinski said, “just to try to identify the determinants—the genes that are related to bone mineral density or peak bone mineral density.”

Several genes have been identified that have very small effects.

“They’re very common, but their effects are very minute,” said Czerwinski. “What we understand now is basically that it’s polygenic, in that there are many, many genes that contribute to osteoporosis risk.”

Bone tissue is continuously being formed and reabsorbed, and genes control each of those processes. As an individual ages, absorption outpaces formation, and bone loss occurs.

“We see if we can identify precursors in early life that affect adulthood health.”

“Ultimately, we want to identify the pathways that are important, and to be able to deliver gene products that can counteract excessive loss later in life,” Czerwinski said.

Secular trends raise more questions

With more than 80 years of data to study, LHRC researchers have noted many secular trends, or changes in a characteristic or disease trait over time.

“This gets to the value of the longitudinal studies, because over the course of our study, blood pressure measures went down, and now they’re on their way back up,” Sherwood said. “Generally you think of a secular trend as a shift up or down, but here you’ve got a U-shaped trend, which you can only identify with good longitudinal data. It becomes a really interesting question to ask, ‘Why is that?’

“A lot of our business is identifying the questions to be asked,” he said.

In the end, finding the answer to Arthur Morgan’s question may lie in knowing what questions to ask. **VS**

For more information, visit med.wright.edu/lhrc

Orange is the new pink

When Casey McCluskey was diagnosed with a malignant breast tumor near the end of her first year of medical school, the unexpected news meant a lot of upheaval.

“School had to be put in the background. All my summer plans had to be put in the background,” she said. “I had to focus suddenly on being a patient instead of being a med student, which was not an easy transition to make.”

As she grappled with her situation, McCluskey drew strength from the immediate, unstinting support of her classmates, the close-knit “Scrubs” of the Boonshoft School of Medicine class of 2012.

“Being away from home when all this happened,” she said, “I had my ‘family’ down here.”

Her family in Akron, including five brothers and sisters, did what they could as well, including starting an “orange ribbon” campaign that combined the symbol of breast cancer awareness with McCluskey’s lifelong favorite color. They sent her photos of orange ribbons displayed all over town, began collecting orange ribbons from other states and countries as the campaign spread, and even got the slogan **“Orange is the New Pink”** chalked onto the route of the 2009 Tour de France.



The entire class of 2012 rallied around classmate Casey McCluskey to offer support after she was diagnosed with breast cancer near the end of her first year of medical school.

McCluskey’s classmates were quick to jump on this brightly colored bandwagon as well.

“On our last day of school,” she said, “I showed up for my last exam, and the entire class was wearing orange.”

Following successful surgery over the summer, McCluskey is now back in school and keeping up with classes while undergoing chemotherapy. She is hopeful, more motivated than ever to become a physician and make a

difference for patients, and still deeply moved by everything her classmates have done (and continue to do) for her.

“It’s been very overwhelming to have that amount of support,” she said. “In a way, it’s been kind of a beautiful experience, for people to have an excuse to tell you that they love you, that they care about you. It’s pretty humbling to have that.” **VS**

Second-year students visit Sweden to serve, learn

Student medical missions abroad typically serve two key purposes: to provide aid to patients and populations in need, and to expose students to the health care systems (or relative lack thereof) of other countries. Many missions pursue these goals by bringing students to underserved areas ravaged by poverty, poor living conditions, and minimal access to even basic medical care.

As four second-year students discovered over the summer, however, the service and education objectives of a global health experience can be achieved even within an industrialized nation widely recognized as having one of the world's finest health care systems.

Midway through their first year of medical school, Erin Forster, Erika Manis, Amy Manzo, and Kaitlyn Renaldi learned about a longstanding bilateral agreement between Wright State and Umeå University in Umeå, Sweden. In the 11 years since the establishment of the agreement, they were surprised to discover, many students from Umeå had come to Dayton, but no Wright State students had crossed the Atlantic to study in Sweden.

The medical students, all members of the Global Health Initiative student organization, were already hoping to participate in a summer service trip abroad, so it was an easy leap to set up plans for three weeks of volunteer work at Umeå's Faculty of Medicine.

Hands-on in the hospital

The students arrived in Umeå, which is the largest city in northern Sweden and one of the country's fastest-growing areas, in June and spent their first two weeks at the

Norrlands University Hospital. During the first week, they went on rounds in the orthopedic ward, assisted in the physical therapy clinic, and often scrubbed in on surgeries, including ACL repairs, bone biopsies, tumor removal, and leg amputations.

"I helped with an eight-hour surgery, a knee replacement," Renaldi said. "It was really interesting, and I was standing right there."

Scrubbing in on a hip replacement, Forster said, made a lasting impression.

"It was a one-of-a-kind experience," she said. I was right in the front seat for this amazing surgery."

During their second week at the hospital, the students saw patients in the clinic during the morning and worked in the emergency room each afternoon, honing their patient interview and physical examination skills under the guidance of orthopedic surgery interns.

Reaching out to those most in need

For their third and final week in Umeå, the students left the hospital and volunteered at Öppen Gemenskap ("Open Community"), a community-based organization serving at-risk children and adults, including many who are homeless, mentally ill, or struggling with substance abuse. The organization provides a variety of services for its clients, including outpatient care and rehabilitation, job counseling, job training, meals, and youth programs.

"The first few days, I was really out of my comfort zone," Manzo said, "but it ended up being a good experience."

"So many times when people walk by the homeless," she added, "they don't



Students spent two weeks working and learning in the Norrlands University Hospital in Umeå, Sweden.

acknowledge them. They don't look at them. They just weren't even visible members of society. You could tell that our talking with them, smiling at them, interacting with them, really made a big difference in their lives."

A more informed perspective on global health care

In addition to being moved and challenged by individual patients and procedures, the students also benefitted a great deal from exposure to a different model of health care.

"It was really interesting," Manzo said, "because we got a firsthand experience of what it's like to work in a socialized health care system. I feel a lot more informed about the health care discussion because of that."

"I think the answer to fixing health care in America is more complicated than just universal health care," said Manis, an opinion she didn't necessarily hold before the trip. "People there like their health care, but it's not perfect. They have complaints about their health care system too, just like we have here."

"I think it's helpful to visit other countries that are doing something right—or doing part of it right," she added, "to learn from them, and then apply it to health care here." **VS**

Taking global health education on the road

In early March, fifth-year M.D./M.P.H. student Jeff Jenks borrowed a bicycle from his uncle.

Jenks hadn't done much cycling before, so it took a while to get familiar with the bike and grow comfortable using its clipless pedals.

Three weeks later, he felt confident enough to saddle up for a cross-country journey of 3,700 miles.

As a member of the 2009 Ride for World Health team, Jenks joined 24 other riders (22 of them fellow fourth-year medical students at various schools) for a two-month bicycle trip from San Diego to Washington, D.C. Along the way, the riders rolled through 11 states, participated in more than 50 education events, and raised \$80,000 to support organizations dedicated to world health.

An avid runner, Jenks felt physically prepared for the trip despite being new to long-distance cycling, and his passion for global health issues made the opportunity to participate in such a unique fund-raising and public education project impossible to turn down.

"It was a once-in-a-lifetime opportunity," he said.

The 2009 trip was the fourth annual Ride for World Health, a tradition begun by medical students at the Ohio State University, where the non-profit organization is still headquartered. In addition to many OSU medical students, the 2009 team included riders from elsewhere in Ohio, as well as New York, Pennsylvania, Virginia, Indiana, and as far away as Arizona and British Columbia. Jenks was the first Wright State student to participate.

Jenks and his fellow travelers covered an average of 80 miles per day, and some days they logged more than 100. They rode through mountains and deserts, and they sometimes had to pedal into 30-mile-per-hour headwinds, heavy snow, or driving rain.

Surprisingly, Jenks said, "The wind was worse than the snow and rain. It can blow you off your bike."

For most of the trip, though, the weather was fine, the terrain was varied and picturesque, and the experience was unforgettable. Jenks was especially fond of the uphill rides, as when the group ascended the mountains surrounding Los Angeles or crossed the Continental Divide at Monarch Pass (elevation 11,312 feet) in Colorado.

Perhaps the best aspect of the trip, Jenks said, was the opportunity to raise awareness of world health issues such as

infectious disease, mental illness, and the impact of poverty.

"Almost every day along the way," he said, "we'd have a group that would go to organizations to talk about global health issues. We'd go to grade schools, high schools, medical schools, Rotary clubs, hospitals—pretty much anyone they'd let us come talk with."

Jenks participated in many of the presentations to medical students, which he found gratifying.

"In medical school," he said, "especially the first couple of years, you're not often directly exposed to some of the global health issues that affect a lot of people in other parts of the world—and in some parts of this country too. Even in this country, access to clean water, adequate sanitation, and adequate and timely medical care is definitely not a given."

Jenks hopes to be active in global health following his graduation in 2010, when he plans to pursue a specialty in internal medicine and a subspecialty in infectious disease.

While the Ride for World Health hasn't made him a passionate cyclist, he wouldn't trade the trip for anything.

"This was one of the best experiences of my life," he said. **VS**



Fifth-year M.D./M.P.H. student Jeff Jenks lifts his bicycle in jubilation at the conclusion of a 3,700-mile journey from San Diego to Washington, D.C., to shine a spotlight on world health issues.

Radio Rounds hits the big-time

In its second and third seasons, *Radio Rounds* welcomed an all-star assemblage of renowned guests from around the country.

In addition, the show's hosts and producer participated in a joint keynote address at an American Medical Student Association (AMSA) conference in Chicago, interviewing a U.S. congresswoman live on stage before an audience of several hundred people. The show also featured a weekly segment showcasing conversations with directors of residency programs from all over the country, aired pre-recorded documentaries by contributors throughout the nation, and launched an expanded Web site and interactive forum.

The show's creators, co-hosts Avash Kalra and Lakshman Swamy and producer Shamie Das, attribute their success to a strong desire, on the part of physicians, medical students, patients, and the

public at large, to share and experience moving stories of real people and their experiences.

"There are these genuine moments," Kalra explained, "of empathy and humanism in medicine, and compassion."

"That's the unifying thread of our show," added Das.

The students consider their work a vital reminder to nurture a passion for medicine and maintain a clear sense of purpose, rather than letting an intense workload and grueling training lead to cynicism or burnout. Remembering what is unique and inspiring about the practice of medicine is equally important for experienced physicians and other listeners, they believe, as well as the show's guests.

"Obviously a lot of these doctors are very busy," Swamy said, "but they always want to make time for this, because this message is that important to them."

Seasons two and three of *Radio Rounds* featured conversations with outstanding guests, including:

Jon Andrus, M.D.

- Deputy Director for the Pan American Health Organization of the World Health Organization
- Recipient of the U.S. Distinguished Service Medal for public health

Brian J. Cole, M.D., M.B.A.

- Head team physician of the Chicago Bulls (NBA)
- Co-team physician of the Chicago White Sox (MLB)
- 2009 NBA Team Physician of the Year

Catherine DeAngelis, M.D.

- Editor-in-Chief of *JAMA, The Journal of the American Medical Association*
- Professor of Pediatrics at Johns Hopkins University School of Medicine

Inzune Hwang, M.D.

Technical Specialty Unit Lead for the 2009 H1N1 Response, U.S. Centers for Disease Control and Prevention

Tracy Kidder, M.F.A.

- Author of multiple bestselling books, including *Mountains Beyond Mountains* and *Strength in What Remains*
- Winner of the Pulitzer Prize, National Book Award, and Robert F. Kennedy Award

Samuel Shem (a.k.a. Stephen Bergman, M.D., Ph.D.)

- Professor Emeritus of Psychiatry at Harvard University
- Author of *The House of God* and *The Spirit of the Place*

Residency program directors from UCLA Medical Center and Brown, Stanford, and Johns Hopkins universities, among others **VS**

For more information, including links to all past shows, visit www.radiorounds.org. Past episodes are also available to download for free on iTunes—just search for "Radio Rounds."

Second-year students Lakshman Swamy, Avash Kalra, and Shamie Das (white coats, l-r) interview U.S. Rep. Jan Schakowsky during her keynote address at an AMSA conference in Chicago.



On the Move



James E. Brown, Jr., M.D., M.M.M., FACEP, EMT-P Acting Chair Department of Emergency Medicine

The Boonshoft School of Medicine has appointed James E. Brown, Jr., M.D., M.M.M., FACEP, EMT-P, acting chair of the Department of Emergency Medicine. Prior to joining the faculty in 1994, Brown received a B.A. in philosophy (cum laude) from the Seminary of St. Pius X and earned a M.D. from the University of Louisville, where he also completed a residency program in emergency medicine and served as chief resident. An associate professor of emergency medicine, Brown has served as the department's vice chair since 2007 and has directed its residency program for nearly a decade. In addition to being board certified in emergency medicine, he holds EMT Paramedic and EMT Tactical licenses and numerous advanced life support certifications, and serves as an advisor and tactical medic for the Dayton Police and Montgomery County Sheriff SWAT teams. Brown is also a member of the American Medical Association, the Ohio State Medical Association, the Greater Miami Valley EMS Council, the State of Ohio EMS Regional Physician's Advisory Board and the National Association of EMS Physicians. He is a Fellow of both the American College of Emergency Physicians and the American Academy of Emergency Medicine.



Paul G. Koles, M.D. Chair, Department of Pathology

Paul G. Koles, M.D., associate professor of pathology and surgery, has been named chair of the Department of Pathology. A full-time faculty member since 2001 and a member of the clinical faculty since 1986, Koles is beloved by his students. They have awarded him the Teaching Excellence in Pre-Clinical Medical Education for an unprecedented seven years since 2002. He has also received the Allen N. Pope Special Merit and Teaching Excellence Awards from the Student National Medical Association, a Faculty Excellence in Teaching Award from the Southwestern Ohio Council for Higher Education and a Faculty Mentor Award from the Boonshoft School of Medicine in 2005. Koles came to the medical school in 2001 from Kettering Medical Center, where he served as chief of pathology and medical director of clinical laboratories. He practiced anatomic and clinical pathology full-time with Kettering Pathology Associates from 1986 to 2001. Koles earned a B.A. from Andrews University and an M.D. from Loma Linda University before completing his residency in anatomic and clinical pathology at Kettering Medical Center/Wright State University, where he served as chief resident.



Julian J. Trevino, M.D. Acting Chair, Department of Dermatology

The medical school has named Julian J. Trevino, M.D. ('87), acting chair of the Department of Dermatology. Trevino joined the faculty in 1991 as a resident instructor within the Dermatology Residency Program, where he also served as chief resident. Following his residency training, which also included three years with the Cleveland Clinic Foundation Department of Internal Medicine, Trevino became a full-time faculty member in 1994. An alumnus of the medical school, Trevino came to Wright State after graduating summa cum laude with a B.A. from Trinity University (Texas). Today, Trevino is an associate professor of dermatology and serves as director of the medical school's Dermatology Residency Program and Immunodermatology Laboratory. He is also chief of dermatology and chair of the Medical Quality Council for the Dayton Veterans Affairs Medical Center and head of the Division of Dermatology for the Children's Medical Center of Dayton. Trevino is board certified in dermatology and pediatric dermatology; is a member of the Ohio State Medical Association; is a member, past president, and president-elect of the Ohio Dermatological Association; and is a Fellow of both the American Academy of Dermatology and the Association of Professors of Dermatology.



Convocation

On Sunday, August 2, 2009, at the Schuster Performing Arts Center in downtown Dayton, Wright State University Boonshoft School of Medicine welcomed 100 new students and their families during a special ceremony to formally mark the start of the students' medical education.

At the annual Convocation and White Coat Ceremony, the incoming students took their first oath of professional medical ethics and received the symbol of their chosen profession—the white coat.

Carefully selected from a competitive group of almost 3,000 applicants, the class of 2013 began classes the following week.

Margaret M. Dunn, M.D., M.B.A., FACS, professor of surgery, executive associate dean of the medical school, and chief executive officer of Wright State Physicians, was the invited speaker for the event.



Howard Part, M.D., medical school dean, and Steven Angle, Ph.D., university provost, (l-r) personally greet students as Dean Parmelee, M.D., associate dean for academic affairs for the medical school, (podium) reads their names to welcome them to the class of 2013.



Dr. Dunn offers advice and encouragement to members of the incoming class.



During Convocation, the 100 new members of the Boonshoft School of Medicine Class of 2013 gathered for the first time and participated together in several important rites of passage to launch their medical education.

Clockwise from top: 1. Members of the class of 2013 share the spotlight during Convocation at the Schuster Center. 2. Robert Turk, M.D., FACS, address the new students and their guests. 3-4. Stephen Zitelli (left), class of 2010, leads the incoming students (right) in reciting their initial oath of professional medical ethics.

Events



Reunion Weekend 2009

The 2009 Reunion Weekend, sponsored by the Medical Alumni Association, brought together members of the classes of 1984, 1989, 1994, 1999, and 2004 for a weekend of family fun and fond memories in mid-July. The weekend began with a private, after-hours dinner and reception at the Newport Aquarium, where alumni and their guests enjoyed full access to the aquarium's thousands of animals and 70 exhibits, including 200 feet of immersive observation tunnels.

The following day featured a CME event sponsored by the Academy of Medicine, as well as an evening riverboat cruise on a 110-foot yacht, including breathtaking views of the downtown skyline and live entertainment under the stars. The weekend ended with an action-packed day at Kings Island, with thrills and entertainment courtesy of the park's 80 rides and attractions—including the Boomerang Bay water park—as well as an all-you-can-eat lunch buffet.

Save the date: Reunion Weekend 2010 July 16-18, 2010

Members of the classes of 1980, 1985, 1990, 1995, 2000, and 2005 will have the opportunity to gather and celebrate on the weekend of July 16-18. Friday night will kick off with a Cincinnati Reds baseball game at Great American Ball Park, including a spectacular fireworks show after the final inning. Saturday promises to bring back plenty of memories with a tour of the Boonshoft School of Medicine and the Wright State University campus, followed by a deluxe evening riverboat cruise. To round out the weekend, the

2010 reunion will also feature a full day of family fun at Kings Island.

Want to help plan your reunion? Contact Nicki Crellin, associate director for advancement, at nicki.crellin@wright.edu

For more pictures from the 2009 event or information on Reunion Weekend 2010, visit med.wright.edu/alumni/somreunion.html

Academy of Medicine Distinguished Guest Lecture and Awards Dinner

An Evening with Golf Legend Tom Watson April 28, 2010



Each year, Academy of Medicine members and their guests gather for a special event to honor students, residents, and faculty; celebrate the invaluable work of academy members; and promote fellowship and camaraderie. The keynote speaker for this year's event is one of the world's most accomplished and admired athletes: golf legend Tom Watson.

During a professional career spanning four decades, Watson has won eight major golf championships, was the PGA Tour's leading money winner five times, and was named the U.S. PGA Player of

the Year on six occasions. The U.S. PGA awarded Watson the annual Vardon Trophy for lowest scoring average three times, and in 1986, the U.S. Golf Association selected him for its highest honor, the Bob Jones Award recognizing distinguished sportsmanship. In 1988, he was inducted into the World Golf Hall of Fame.

Nearly 40 years into his storied career, Tom Watson is proving he is still a world-class competitor, with an unforgettable run and second-place finish at the British Open in 2009 and a victory in the opening event of the 2010 PGA Champions Tour.

For more information, visit med.wright.edu/academy

Graduation Ceremony for the Class of 2010 May 28, 2010, 6:30 p.m.

Vice Admiral Regina M. Benjamin, M.D., M.B.A. Surgeon General of the United States



Graduation is always a memorable event and a high point of the academic year, but this year's ceremony will be especially noteworthy. In addition to welcoming 89 outstanding new physicians into the medical profession, attendees will be treated to a commencement address by a very special guest speaker: Regina Benjamin, M.D., M.B.A., Surgeon General of the United States Public Health Service.

As the 18th U.S. surgeon general, Benjamin oversees the operational command of 6,500 uniformed health officers who serve around the world to promote, protect, and advance the health of the American people. Her commencement address to the class of 2010 will explore "What America Wants and What Society Needs in its Future Physicians."

The graduation ceremony for the class of 2010 will take place in the Benjamin and Marian Schuster Performing Arts Center in Dayton. Admission is free and no R.S.V.P. is necessary.

For more information, visit med.wright.edu/calendar/

In Good Company

Using power responsibly: Jill Waibel on lasers, fame, and new hope for patients in need

Well before she even considered a future career in medicine, Jill Waibel, M.D. ('01), (then Jill Stewart) found herself near the center of national public health crisis.

As a high school senior in Cicero, Indiana, in 1987, Waibel became a reluctant but passionate spokesperson when her school district welcomed a new student: Ryan White.

After contracting HIV/AIDS through a blood transfusion to help treat his hemophilia when he was just 13, White was basically exiled from his school and made an outcast in his town. He won legal battles to secure his right to attend school, but when many parents chose to withdraw their children, his mother decided it was time to move.

"Elton John bought Ryan a home not far from where we lived," Waibel said. "Our school basically shut down the beginning of the year I was student body president, and said 'We are going to accept this child.'"

Indiana's previous governor was then serving as the head of the U.S. Department of Health and Human Services, and the president of the state medical association had worked with AIDS patients in San Francisco for years before relocating to Indiana.

"They basically all decided that we were going to set an example for the rest of the nation," Waibel said, "and we were going to have the kids be educated so the adults couldn't panic."

Because Waibel lived near the Whites' new home, his mother, Jeanne, asked her to drive him to school.

"We got to be very good friends," Waibel said of White, "and he was very inspirational to me."

In her dual capacity as a close friend of White's and an elected student leader, Waibel found herself playing a key role in intensive outreach and education efforts. In addition to appearances on shows as diverse as *Sesame Street* and *Nightline*, she testified before a presidential commission on AIDS and worked with Surgeon General C. Everett Koop, M.D., Sc.D., who later awarded her a national Enhancement of Public and Community Education Award.

Although White lost his battle with AIDS in the spring of 1990, a few months before his high school graduation, his story helped to change public perceptions of the disease and energize efforts to understand and control it. On a personal level, his friendship and courage also inspired Waibel's life's work.

A future in medicine

Everything about her time as Ryan White's friend and advocate had a profound effect on Waibel, sparking an interest in health care and fostering a desire to make a difference. She was also strongly influenced by one of White's



Jill Waibel, M.D. ('01), pioneered a fractional laser treatment that is bringing new hope and dramatic improvement to many burn patients.

physicians: pediatric infectious disease specialist Marty Kleinman, M.D., of the Riley Hospital for Children in Indianapolis.

"Once I met Dr. Kleinman," Waibel said, "I knew I wanted to be a doctor."

Waibel took the first step toward a future in medicine soon afterward, when she enrolled in Indiana University and began pursuing a bachelor of science degree in biology. Being at IU allowed her to stay close to her family and friends, including



When triplets Jordan, Trae, and Chandra Berns (l-r) were just 17 months old, a house fire claimed the life of their mother and left them badly burned. At the age of 22, the triplets came to Waibel for a series of fractional laser treatments that have made a dramatic difference in their skin color and texture—as well as their confidence and self-image.

White. Soon after his passing, she founded a charity dance marathon in his memory that has become an annual tradition at the university and has raised more than \$8.5 million for Riley Hospital to date.

While at IU, she also met her future husband, Andy. After graduation, the couple moved to Dayton, where Andy's family still operates a thriving HVAC business. For two years, Waibel took graduate coursework in physiology and biophysics at Wright State, where she then enrolled in medical school.

"I interviewed multiple places and was accepted," she said, but "I think I was drawn to that environment. One of the things I loved about Wright State is it's very nurturing. They want everyone to succeed. They really look for human beings who care about the community and want to do philanthropy, and so I think that the environment and the kind of students that they're making into doctors are very special. And I also think their faculty and their curriculum are outstanding."

Entering a competitive specialty like dermatology, Waibel felt very well prepared, in part due to the school's innovative educational model.

"We do so many procedures because it's a community-based program," she explained. "You get that kind of experience, and you can't trade that for anything."

In addition, Waibel was fortunate once again to encounter physicians whose expertise and example proved invaluable, including Gary LeRoy, M.D., associate dean of student affairs and admissions and associate professor of family medicine, and Robert Turk, M.D., FACS, clinical professor of surgery and director of undergraduate surgical education.

"I've had good mentors," Waibel said, "and I've been very blessed to have great people in my life who have been an inspiration to me as a physician.

"Dr. LeRoy was very influential," she added. "He'd see the patient as a human being, and remember the higher goals of medicine, and not forget why we go into the field. I think that's so important for all of us—to keep the vision and to help people, and not just treat conditions."

When considering specialties, Waibel was conflicted, because she was attracted to fields as varied as surgery, internal medicine, pediatrics, and geriatrics.

"Dr. Turk just said, 'You should do dermatology,'" Waibel said, and his recommendation turned out to be ideal.

"It is wonderful," she said. "For me it's a perfect fit. It's a very diverse specialty that incorporates general medicine as well as specialty medicine. Any disease can go to the skin, so you have to know all your pediatrics and internal medicine, and

then on top of that, you have to know all the dermatology, and you get to do surgery and work closely with other doctors."

Getting "the laser bug"

Following her graduation in 2001, Waibel considered dermatology programs across the country and again decided to stay with Wright State. While her residency program was based in Dayton, she did rotations in Indiana and Cincinnati, where her work focused on laser surgery.

"I kind of got the laser bug at that point," she said. "I thought lasers were going to be the wave of medicine's future. They're amazing. There's no scar. It's like taking a magic eraser and helping patients."

After serving as chief resident and completing her residency program in 2005, Waibel entered private practice and began serving on the medical school faculty. At the same time, she was able to publish and present around the country based on her innovative work with lasers. While other surgeons had treated burn victims with limited success using traditional laser surgery, Waibel discovered something new.

In Good Company

“I was the first doctor in the U.S. to treat burn patients with a fractional laser,” she said, “which means you treat portions of the skin, but you have islands of skin around it that are untreated. These areas generate proteins, which then, we think, stimulate the body’s stem cells.”

“There is a very special wound healing mechanism with the fractional laser,” she explained. “It’s a very controlled wound. It’s kind of like aerating your lawn—we’re removing the bad lawn, and then the new lawn grows back thicker.”

While the fractional laser often requires multiple treatments over the course of many months, the cumulative benefit can be upward of 60 percent improvement in the skin’s appearance, texture, and flexibility, in addition to relief from pain and itching. In fact, Waibel’s first patient, Tami, achieved nearly 100 percent improvement.

“We’re all learning together, doing our studies and learning more so we can help these patients”

“I’m still fairly blown away at how effective the treatments are,” Waibel said. “Tami will tell you she looks better now than before her burns.”

Improving on success

Since that first success story, Waibel has continued to study and enhance the fractional laser treatments. In late 2007, she and Andy, along with their daughters, Grace and Hannah, moved to Florida so Waibel could work closely with researchers at the University of Miami while

continuing to teach residents and care for patients. She has also collaborated with physicians at Harvard and UCLA on clinical studies and is working with basic scientists and industry partners to develop new and better lasers.

“We’re all learning together, doing our studies and learning more so we can help these patients,” she said. “It’s early, but it’s been an exciting journey.”

“As a doctor,” she said, “to stay involved—not just doing the medicine, but keeping a hand in that research—has been very rewarding to me as well, because it makes me a better clinician.”

Waibel estimates that 10 to 15 percent of her practice now consists of burn patients from across the country—or around the world—who have sought her out after learning of her work with the fractional laser, often through her frequent lectures and media appearances.

“I just got back from lecturing in China and Berlin and Bermuda, and I’m on my way to Bangkok and Saudi Arabia,” she said, “so I’m getting to travel the world and teach other doctors in other parts of the world, and I actually learn from them as well.”

In terms of reaching larger, more general audiences, in 2009 alone, Waibel was featured in *People* and *Glamour* magazines, appeared on the news show *The Daily Buzz* and the medical talk show *The Doctors*, and was a guest on the *TODAY* show twice to discuss her work with triplets who were burned in a house fire as toddlers 20 years ago.

Her early experiences in the national spotlight have made Waibel acutely aware of both the power and the price of widespread media exposure. While she doesn’t seek out this kind of publicity, she knows it can be a uniquely effective way to spread the word about the potential benefits of fractional laser surgery.

“There are 20 million burn patients in the United States,” she said. Many of them can’t bend their arms or legs. Their faces are deformed. They can’t smile. They can’t eat. It’s amazing that our colleagues can keep them alive, but we’ve got to figure out how to get some quality of life to these patients.

“The media is kind of a double-edged sword, to be honest, because you don’t control it,” she said. “It kind of opens Pandora’s box, on the one hand. On the other hand, the media also opens a lot of doors. I’ve certainly gotten a lot of lovely patients and gotten to interface with other doctors, via the media, but I think we’ve got to be careful as an industry. The media has a lot of power, and we need to use it responsibly.”

“I don’t seek media out,” she added. “I think part of that’s from Ryan. Ryan hated the media, but he felt like it was his duty, so that other children wouldn’t have to suffer, which I always respected. He was really just trying to be an ambassador. He did it for the right reasons.” **VS**

A tradition of innovation: Mark Anstadt builds on a family legacy while breaking new ground



Mark Anstadt, M.D. ('86), receives the 2009 Outstanding Alumni Award from Wright State University President David R. Hopkins, P.E.D. (right).

With significant new advances announced every year, the pace of change in medicine often seems lightning-fast. In reality, many years of diligent work may be necessary to develop, test, refine, and roll out new treatments or technology. In fact, sometimes the quest to bring the benefits of a medical innovation to patients can become a family legacy spanning generations.

Such is the case for Mark Anstadt, M.D., ('86) FACS, who has worked for more than 30 years to perfect a life-saving device his father, George L. Anstadt, invented in the early 1960s.

“The device I’ve been spending time with since I was actually in high school, or even earlier,” Anstadt said, “is something my father termed Direct Mechanical Ventricular Actuation, or DMVA.”

In essence, the device is a form-fitting cup that surrounds the heart and physically compresses and expands it when the heart is failing. While versatile enough to be useful in a variety of scenarios, it is ideal for quick application when a patient experiences sudden cardiac arrest or significant heart failure. The device then maintains heart function and blood flow, allowing physicians to undertake further interventions while the patient stabilizes.

Anstadt has researched the device to improve and better understand its functionality over the years. In parallel, he has built a highly successful career as a cardiothoracic surgeon. He is currently an associate professor of surgery and an adjunct associate professor of pharmacology and toxicology with the medical school, and he serves as medical director of cardiothoracic surgery, chair of the department of surgery, and chair of the section of cardiothoracic surgery with Miami Valley Hospital in Dayton. In addition, he recently became section chief of cardiovascular and thoracic surgery at Upper Valley Medical Center in Troy, Ohio.

Anstadt is a member of many professional organizations, including the American Heart Association, the Society of Thoracic Surgeons, and the American Society for Artificial Internal Organs, and is a Fellow of the American College of Surgeons. Additionally, Wright State University honored him in 2009 with its Outstanding Alumni Award, given

In Good Company

annually to a single graduate of the medical school for distinguished achievement, strong character and integrity, and a widespread positive impact on the world.

Pumping the blood without touching it

“Most heart pumps we use today,” Anstadt said, “are devices that require cannulas be placed into the heart or great vessels. The devices remove blood from

“It’s got a vacuum line that generates negative pressure, so you just put it over the heart, and it literally aspirates itself onto the heart,” Anstadt said. “It gets on the heart and sort of girdles it. It’s atraumatic. You don’t have to sew or cause any bleeding.”

In fact, DMVA has no contact with blood at all, which is the most significant advantage, according to Anstadt.

“This truly is a heart pump,” he said, “as opposed to a blood pump.”

Some other heart-girdling devices that are in use or under development merely prevent the heart from becoming distended to avoid serious heart failure, while still others apply external pressure to help pump the blood. Both categories of devices have serious limitations, though. Simply girdling the heart doesn’t compress the muscle to support blood flow, while actively compressing it can force the heart to work harder to re-expand and refill with blood.

“DMVA actually assists the heart both during contraction and relaxation,” Anstadt said, because the slight negative pressure that allows the device to fit snugly around the heart facilitates its ability to fully expand the heart during refilling.

Anstadt’s most recent research, conducted at Wright State with transesophageal echocardiographic imaging, evaluated muscle contraction and showed that DMVA enhanced both the systolic and diastolic phases of the cardiac cycle. Additionally, Anstadt was enthused to learn that beyond applying uniform pressure, the device seems to facilitate normal synchrony of complex, multidirectional contractions within the

various layers of the heart. Exactly why this should be the case is still unknown, but Anstadt believes the optimal forces delivered by the device may mimic and reinforce the heart’s natural twisting motion and rhythm.

Quick, simple, and good for the cells

In addition to studying the mechanical properties of the device, Anstadt is investigating its impact on heart health and healing on a cellular level.

“We’re looking at the metabolic, molecular markers of heart failure,” he said, “a whole slew of so-called maladaptive cell signals.”

These cell signals can help the heart deal with stressful conditions, but in patients with repeated or chronic cardiac trouble, the signals can malfunction. In particular, heart failure tends to increase apoptosis (pre-programmed cell death), which normally allows for the ongoing, beneficial replacement of old cells by new ones. Too much apoptosis results in healthy, necessary cells being damaged (often leading to heart failure), while too little can cause uncontrolled, harmful cell growth, as in cancer.

“We’re not only helping the heart contract,” Anstadt said, “but it looks like at a cellular level, this might also be beneficial.”

The single greatest benefit of DMVA, however, may be its simplicity.

“All those other things are kind of like icing on the cake,” Anstadt said, “because the reality of this device is that it’s really needed when you have a patient dying in front of you, and you don’t have any

“The real goal, in my view, is to save lives and do something for society. That’s the reason I think this is worthwhile.”

either the heart or great vessels and pump the blood back into the circulatory system, circumventing the heart.”

Unfortunately, he added, “All these devices, including the total artificial heart, have significant issues with bleeding and clot formation. The entire blood-contacting issue has just not been solved. That’s where the major morbidities and mortalities with these devices come from.”

The problem is exacerbated by the need to use blood thinners when the devices are implanted to lower the risk of clotting. Without the blood thinners, a patient can have a stroke. These same drugs, however, can greatly increase the chances of significant blood loss.

“You’re between a rock and a hard place,” Anstadt said. “The problems with bleeding, you can’t overemphasize. It’s just a nightmare.”

In contrast, DMVA, is much less invasive.

time. Even though we have all of this sophisticated technology, it takes, literally, in the best circumstances, probably 15 to 20 minutes to get most devices in. DMVA takes about three minutes. You can get it in quickly, and you can save the brain, because if the brain dies, the patient is dead.”

From materials to mitochondria

While the concept of DMVA has not evolved radically since George Anstadt developed early prototypes decades ago, it has taken years to refine and study the device to better understand its functionality and clinical potential. The reasons for the prolonged time frame have been many, including setbacks with early prototypes, the contrast between the conceptual simplicity and more nuanced application, and the challenges of user-friendly drive control.

Anstadt devoted some time to these issues while pursuing a B.S. in animal biosciences at Pennsylvania State University, as a medical student at Wright State, and during his first two years as a general surgery resident at the Ohio State University. His focused heart research began once he became a cardiothoracic surgery research fellow at Duke University, where he stayed for 10 years, completed his general surgery and cardiothoracic residencies and a clinical fellowship, and served as a teaching scholar in cardiothoracic surgery. Based on his ongoing work with DMVA and on other research over the years, Anstadt has published more than 50 scientific papers and written seven book chapters.

“When I was at Duke, one of the first things I studied was materials,” Anstadt said.

Early prototypes were made of polyurethane, which is strong and durable, but Anstadt found it

traumatized the mitochondria in heart muscle cells, rendering them unable to convert oxygen into energy. As a result, after four hours on the pump, hearts he studied were mechanically functional (i.e., the artificially driven blood flow was strong), but the tissue was dead. Current DMVA devices are made of silicone rubber and do not cause this problem, but Anstadt still hopes to work with colleagues at Wright State to explore the impact of polyurethane models on mitochondria.

“I think it would be nice to delineate the mechanism of injury scientifically and explain why you shouldn’t go down that path,” he said, “because other companies with other technology are going back to polyurethane.”

A long, winding path to the patient’s bedside

After several difficult and unsuccessful startup ventures to bring DMVA to market, Anstadt is now taking a more personal role. In addition to pursuing federal research and development grants, he is exploring options for venture capital.

“I’m involved in industry to try to raise funds and develop this device for use in the clinical setting,” he said. “To get it into the market, I think it’s pretty much where it needs to be in terms of concept and design.”

What is lacking, he believes, is a more automated and user-friendly system to operate the device once it is in place, making minor adjustments to maintain

the proper fit, pressure, compression strength and rhythm, and other parameters.

“Right now, the operation of this device is a big box with a lot of dials,” Anstadt said. “I can adjust it, and so could anyone with training, but that training takes a lot of time. It’s not intuitive.”

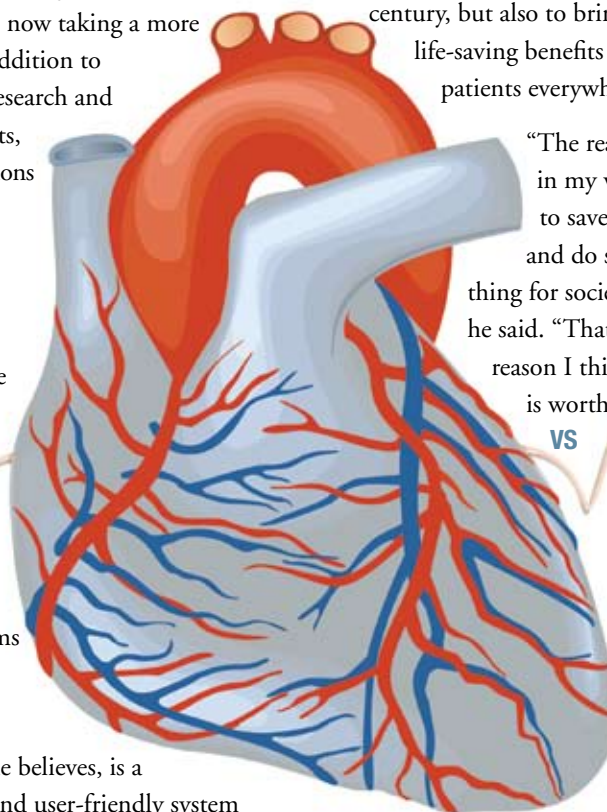
Anstadt also believes it is important to focus on enhancing the device itself rather than building a marketing plan around it.

“Historically,” he said, “a lot of money’s been wasted around advertising it as an answer—which it isn’t—but not putting the money into technology. I’m interested in raising money to put into technology.”

Anstadt feels the obstacles to widespread clinical use of DMVA are significant but surmountable. He is determined to overcome them not only to realize a shared aspiration that he and his father have pursued for nearly half a century, but also to bring life-saving benefits to patients everywhere.

“The real goal, in my view, is to save lives and do something for society,” he said. “That’s the reason I think this is worthwhile.”

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Alumni Notes

We're proud of our alumni and want to spread the word about your achievements. If you have professional news or personal updates to share—or simply want to stay in touch—please contact the Office of Advancement at som_adv@med.wright.edu or (937) 775-2972.

1984

Evangeline Andarsio, M.D.

is practicing OB/GYN in Dayton, Ohio, and is co-director of Healer's Art course at the Wright State University Boonshoft School of Medicine. A board member and former chair of the Academy of Medicine, in 2009 she played a key role in launching the annual Medical-Spirituality Conference, which will hold its second session on April 15, 2010. In January, she began serving a one-year term as president of the Montgomery County Medical Society.

Marvin Williams, M.D.

practices emergency medicine at the Springfield Regional Medical Center in Springfield, Ohio. He and his wife Pamela have three children, Christian, Brandon, and Matthew.

Jude P. Crino, M.D.

is currently serving as a full-time faculty member in maternal-fetal medicine at Johns Hopkins University School of Medicine in Baltimore.

Richard D. Smith, M.D.

is the co-founder of Pediatric Associates of Dayton, a thriving practice with three office locations. Though now retired, he remains an active volunteer and board member with several community organizations. In addition, he serves as chair of both the Medical Alumni Association Advisory Board and the Board of Directors of the Dayton chapter of A Special Wish Foundation. In February, he was awarded the university's annual Outstanding Alumni Award.

1986

Al Kover, M.D.

is clinical assistant professor of anesthesiology at the Ohio State University and practices at OSU Hospital East, specializing in orthopedic and regional anesthesia. He will earn a Pharm.D. degree in March from OSU, graduating *summa cum laude* as a member of the Phi Kappa Phi honor society. He is also the author of the clinical pharmacology chapter in the American College of Surgeons *ACS Surgery* series for 2010. He and his wife Lisa have three children, Bryan (28), Kristin (23), and Kaitlyn (20), and welcomed their first grandchild in January.

1989

Elisabeth Righter, M.D.

is a faculty member at the University of Wisconsin's Fox Valley Family Medicine Residency Program in Appleton, Wisconsin. An avid SCUBA diver, she has completed nearly 300 (286, to be exact) dives in unforgettable locations around the world.

1992

Kevin Perry, M.D., FACS

is practicing with Cary Urology in Cary, North Carolina. He is board certified by the American Board of Urology and is a Fellow of the American College of Surgeons. He and his wife, Kristine, have three children: Gillian (17), Olivia (14), and Kip (13).

1994

Thomas Englehart, M.D.

is practicing as a clinical anesthesiologist in Columbus, Ohio, where he and his wife Ginny recently celebrated their 25th anniversary. In his spare time, Englehart enjoys participating in WWII reenactments, including marching in Memorial Day, Independence Day, and Veteran's Day parades in full paratrooper gear. In 2005, he met a fellow Wright State medical school graduate in an Egyptian desert during a military exercise.

Gregory Reveal, M.D.

is an orthopaedic traumatologist at Methodist Hospital in Indianapolis, focusing on reconstructive upper extremity problems. He and his wife Melody Igleheart, D.M.D., have two children: Beau (5) and Vivi (2)

1999

Ardis Martin, M.D.

is practicing as a child and adolescent psychiatrist at a community mental health center in rural Colorado. He is also a volunteer faculty member with the University of Colorado Health Sciences Center in Denver. He enjoys conducting research on cultural competency and media, has published two articles on the topic, and will be presenting some of his work at an upcoming meeting of the American Academy of Child and Adolescent Psychiatry.

2004

Lisa Kaiser, M.D.

Was named Miami Valley Hospital's Resident of the Year based on a vote by all residents in the hospital. She is currently practicing in an outpatient family medicine office, has one son, Emerson, and is expecting a second child.

Inspired to serve those most in need

As a high school student from a small town in the heart of Ohio's Amish country, Ryan Schmucker never considered a career in medicine until he job-shadowed a local surgeon.

"I was completely hooked from that point. I was just fascinated. I began to see medicine as something I could really enjoy doing. It's working with people, it's serving people, and there's also never a dull moment—you're constantly challenged."

During college, Ryan spent his summers working in a hospital as a phlebotomist, doing research with a cardiologist, and, the summer before his senior year, volunteering for two months in a clinic in Haiti.

"That was just completely life-changing. We would see 150 to 200 patients a day. What struck me is that we were putting a Band-Aid on a bigger problem. Their socio-economic conditions were just horrible. Initially, I was really frustrated, but then I thought, 'No one else is helping these patients. They need something. They need some sort of medical care.' It's motivated me to find ways to try to change the conditions that people live in."

In addition to his work in Haiti, Ryan has volunteered at a hospital in Peru and an orphanage in Russia. He was initially drawn to the Boonshoft School of Medicine for its unique opportunities to continue pursuing his passion for global health, including an international health curricular track and the Global Health Initiatives student organization.



As an undergraduate, second-year student Ryan Schmucker spent two months volunteering at a health clinic in rural Haiti.

"I didn't encounter any other program like the one at Wright State," Ryan said. "I also loved the small class size here. When I interviewed here, it really seemed like a community. The students I interacted with seemed like they knew each other and were friends. And not only that, but just the feel I got from the faculty and staff I interacted with—you don't find that everywhere."

When he was awarded a tuition scholarship in 2008, Ryan was able to take the first steps toward fulfilling his dream of becoming a surgeon and making a difference in the lives of those in need.

"I was thankful for it. It's a huge blessing."

Ryan Schmucker
Boonshoft School of Medicine
Scholarship Recipient
Class of 2012

Your support can give outstanding students like Ryan an opportunity to fulfill their potential, pursue their dreams, and prepare for a lifetime of service to their patients, their communities, and the world. The life-changing impact of your contribution truly is nearly limitless, so please visit wright.edu/go/givevital to make your gift to the Boonshoft School of Medicine today.



At home in White Hall

The new Medical Education Center in White Hall was specifically designed to serve as a “home away from home” for medical students, especially during the first two years of intensive pre-clinical study. Since the building opened in fall 2008, some 200 incoming students have voted with their feet (and stiff backs, and tired eyes) and their verdict is unanimous: mission accomplished. Even outside of class hours, the building is often full of students making the most of every quiet corner, comfortable chair, or sunny window as they study, socialize, study, grab a snack or a power nap, or even fit in some studying.

