



COURTESY OF INTERMOUNTAIN HEALTHCARE

Pictured here at a meeting at Intermountain Healthcare in Utah last November, the Collaborative includes six of the nation's leading health-care systems. DH was represented by seven people, including Drs. James Weinstein and Thomas Colacchio.

New national collaborative will mine health data in search of gold

Instead of waiting for Washington, D.C., Dartmouth-Hitchcock and five other institutions are turning to each other to solve the cost and quality problems plaguing U.S. health care. The Collaborative, as the group of six institutions is being called, will pool data about outcomes, quality, and costs for the most common and expensive conditions and treatments.

Path: “If we know that the treatment path for diabetes at one institution results in better clinical outcomes, higher patient satisfaction, and lower overall costs,” says Dr. Robert Nesse, CEO of the Mayo Clinic Health System, a Collaborative member, “then there is knowledge to be shared and replicated in other institutions.”

In addition to Dartmouth-Hitchcock and Mayo, the members are the Cleveland Clinic, Denver Health, the Geisinger Health System, and Intermountain Healthcare. Together, they

serve over 10 million people.

Initially, the group will focus on eight common conditions and treatments for which costs are ballooning and dramatic variations exist in quality and outcomes. The eight are asthma, depression, diabetes, heart failure, labor and delivery, spine surgery, weight-loss surgery, and knee replacements, which collectively represent hundreds of billions of dollars in direct medical costs each year.

Cost: The group is tackling knee replacements first. Over 500,000 are performed each year in the U.S., at a cost ranging from \$16,000 to \$24,000 per operation. Collaborative members have already begun pooling knee replacement data and expect to have identified best practices by mid-2011. Pilot testing of those practices will begin immediately afterward.

The fact that nothing like the

Collaborative has ever been tried nationally is in part due to the logistical challenges of collecting data from so many different institutions. First, there are patient privacy and data security hurdles to be cleared. Then there is the fact that not all places collect the same data in the same way, and not all places are willing to have their practices scrutinized by their peers.

“While the lowest common denominator—billing data—is fairly standard across sites, the required clinical and patient-reported data is not at all standard,” says Dr. James Weinstein, copresident of Dartmouth-Hitchcock, who’s spearheading the Collaborative. Weinstein also directs the Dartmouth Institute for Health Policy and Clinical Practice (TDI), where the data will be housed and analyzed.

“In the short term,” he explains, “the data will be incom-

plete and accommodations in the statistical analysis will need to be made.” But over time, Collaborative members will update their data collection systems so outcomes, quality, and costs can be easily compared.

Major: Such improvements will require the institutions to expend considerable time and money, and, so far, no outside funding for the Collaborative has been obtained. “It is a major commitment,” says Weinstein, “especially in the uncertain and costly health-care environment that exists today.”

Still, over 30 additional institutions have expressed interest in joining the Collaborative. But the group plans to add no more than 10 this year, says Weinstein, to keep the project “scalable.”

While membership in the Collaborative may be limited, its findings will be disseminated broadly and rapidly. “If we can find the best knee replacement pathway,” says Weinstein, “why shouldn’t everyone have it?”

Weinstein and the leaders of Mayo, Intermountain, and Geisinger began working toward the Collaborative about three years ago. They wanted to find a way to “band together” around common goals and “act proactively” to solve the biggest challenges in U.S. health care, says Weinstein.

Solve: “My belief is that the federal government will not solve health care’s problems,” he recently told a group of DMS fourth-year students.

Whether the Collaborative will or not, one thing is clear: it won’t be for lack of trying.

JENNIFER DURGIN

HIT LIST: DMS health-policy researcher Dr. Jack Wennberg is one of three candidates shortlisted for the prestigious *British Medical Journal* Lifetime Achievement Award. The voting is taking place between now and April 9 at <http://groupawards.bmj.com>.



THEN & NOW

A reminder of the pace of change, and of timeless truths, from *Dartmouth Medical School: The First 175 Years* by Carleton B. Chapman:

“The other significant appointment at the time was Oliver Wendell Holmes, the poet-physician of Boston. . . . Although he lectured at Dartmouth only two years, the remarkable fact is that he left his beloved Boston at all. He . . . accepted the job as Professor of Anatomy on 12 July 1838 . . . [but] had . . . misgivings about moving from the ‘hub of the solar system’ to the backwoods.”



6

DMS faculty in 1838

2,185

DMS faculty in 2010

32

Graduates of DMS in 1838

192

Graduates of DMS in 2010

No more singing the blues about OR waste

Most operating rooms are a sea of blue—blue gowns, blue drapes, blue wraps. But over the last five years, the DHMC ORs have become increasingly green. The effort includes recycling plastic containers, encasing sterilized equipment in reusable hard cases instead of disposable wrap, and reprocessing single-use devices.

Reuse: When people first hear that “we are reusing things that are not ‘supposed’ to be reused,” says John Leigh, manager of waste and recycling, they “freak out.” But peoples’ fears subside once they learn that the devices are sterilized and prepped for reuse according to strict Food and Drug Administration guidelines. “Infection prevention and patient safety are always going to trump other considerations,” says Leigh.

Operating rooms are among a hospital’s most resource-intensive, waste-generating areas, typically producing 20% to 30% of total waste volume. At DHMC, operating room waste makes up a significant portion of the eight tons of waste produced each day, says Leigh. So efforts in the OR to reduce, reuse, and recycle make literally a ton of difference for the environment.

Line: The efforts even benefit the bottom line. In 2010, for example, DH saved approximately \$300,000 by reprocessing some devices instead of tossing them and buying new ones.

To help promote green prac-

tices in ORs across the country, and to learn and share best practices, Dartmouth-Hitchcock recently joined a national collaborative of more than 85 hospitals. The effort is led by Practice Greenhealth, a membership organization for health-care institutions that are devoted to environmentally responsible operations. DHMC was already a member of the organization’s Environmental Leadership Circle.

Operating rooms typically produce 20% to 30% of a hospital’s waste.

(For more on DH’s efforts to reduce its environmental impact and minimize employees’ and patients’ exposure to toxic substances, see dartmed.dartmouth.edu/su07/01 and watch the web-extra video “Inside Waste Management at DHMC.”)

By being part of the collaborative, “we’re finally getting credit for a lot of great behind-the-scenes work,” says Leigh. Much of that work is done by OR nurses, he adds, who are “constantly asking good questions” about how to “be green.”

For a long time, Dartmouth OR nurses have been “pushing to recycle more,” says nurse Katie Steuer, a clinical educator in the OR. Now, OR staff can recycle that ubiquitous blue wrap (which is made of polypropylene), as well as unsoiled drapes and gowns; rigid, empty plastic containers; and boxboard, which is often part of equipment packaging. Any items in the surgical field—the area immediately surrounding the patient—cannot be recycled once surgery has started. However, almost 80% of packaging waste from a procedure is generated before the patient even enters the room, notes Leigh.

Can do: With support from Steuer and other OR staff, Leigh is also exploring the possibility of replacing many common disposable items, such as drapes, gowns, and basins, with reusable ones that can be sterilized. “John has been instrumental in making us aware of what we can do,” says Steuer—in seeking ever more ways to bring some green to the sea of blue in the ORs.

JENNIFER DURGIN

FLYING SQUIRREL GRAPHICS



The blue drapes and basins in the DHMC ORs are no longer universally disposable.



PAPER TRAIL: A hospice chaplain who wrote the newspaper advice column "Annie's Mailbox," formerly "Ask Ann Landers," praised the wisdom in *The Four Things That Matter Most*—a book written by Dartmouth palliative-care expert Dr. Ira Byock.

Use of blood drops during cardiac surgery

Thanks to good data and clear communication, the cardiac surgery team at DHMC has reduced its use of blood transfusions in recent years. Transfusions can save the lives of patients who lose a large amount of blood, but they also carry risks.

"Years ago, it was just sort of accepted that anybody that had cardiac surgery was going to need to be transfused," says Lawrence Dacey, M.D., a cardiothoracic surgeon and DHMC's chief medical officer. But recently, he notes, studies have shown that transfusions raise the risk of infection in the short term and lead to worse outcomes for patients in the long term.

"Even giving one transfusion increases your risk of long-term mortality," adds Donald Likosky, Ph.D., an assistant professor of surgery.

Levels: Once a patient's red blood cell count drops too low, a transfusion is necessary to keep the patient alive. Doctors don't always agree about exactly how low is too low, but today, says Dacey, they're generally willing to allow red blood cell levels to drop lower than was thought to be safe in the past, in part because more is known about the risks of transfusions.

To help patients avoid those risks, Dacey and Likosky helped start an initiative in 2004 to reassess the use of transfusions during heart surgeries at DHMC. The first step was simply to understand when transfusions were typically used and how the decision was made. In this phase,

they began tracking the rate of transfusions during surgery.

The next phase was aimed at trying to reduce the use of transfusions by talking with everyone involved in heart surgeries—including surgeons, anesthesiologists, nurses, and staff from the blood bank. The effort also included bringing in outside experts to give talks about the latest evidence on transfusions.

DHMC's attending cardiac surgeons, who typically make the decision to give a transfusion, then came to agreement on the thresholds at which transfusions would be given. If a patient's red blood cell level dropped below that point, the patient would be given a transfusion. Above that point, the surgical team would keep in mind the goal of reducing the use of transfusions, although a trans-



A three-year effort has reduced transfusions during cardiac surgeries at DH.

"Even . . . one transfusion increases your risk of long-term mortality."

fusion could still be provided if the attending surgeon deemed it necessary.

"The goal was not to remove clinical judgment," Likosky says. "The goal was to say, 'This is how we feel we ought to practice.'"

Track: During the last phase of the project, the team did not actively discuss the initiative but continued to track transfusion rates. They wanted, Likosky says, to see if the rate would return to previous levels if they stopped focusing on the issue as intently.

The three-year effort resulted in a significant reduction in the transfusion rate. From phase one to phase two, the transfusion rate during cardiac surgery dropped from 33% to 26%. The reduction was not only sustained during the last phase of the effort but declined further to 23%. And patients who did not receive a transfusion were less likely to get an infection or pneumonia while they were hospitalized.

Consistent: Likosky and Dacey caution that the process wasn't designed to draw definitive conclusions about patient outcomes. But, Dacey says, these findings are consistent with other reports showing the benefits of avoiding transfusions when possible.

The effort may have come to an end, but the cardiac surgery team continues to keep the findings in mind. "Before you transfuse somebody now, you're thinking long and hard about whether you need to do this," observes Dacey.

AMOS ESTY

THEN & NOW

A reminder of the pace of change, and of timeless truths, from the 1902 DMS Circular of Information:

In the second-year course in Bacteriology, "special attention is given to the examination of sputum for tubercle bacilli, to the diagnosis of diphtheria, the technic of the Widal serum diagnosis in typhoid fever, and to staining gonorrhoeal pus. Each student is required to isolate a number of different organisms. Special instruction is given to any student desirous of doing research work."



2000

Year DMS began a clinical trial of a new tuberculosis vaccine, in partnership with a Tanzanian medical school

2009

Year the researchers announced that the trial showed a 39% reduction in the rate of definite TB

FAT CHANCE: The DHMC cafeterias deep-sixed their deep-fat fryers in July 2009 as part of the employee health program. Not only are an estimated 21 million fewer fat calories now consumed per year, but the number of items sold rose by 1.6%



THEN & NOW

A reminder of the pace of change, and of timeless truths, from a 1991 history of Mary Hitchcock Hospital:

“The hospital continued to enjoy . . . the material and financial support of the community. Contributions took many forms, from x-ray machines (the hospital’s first, in 1903, was the gift of four Hanover residents . . .) to assorted amenities for patients [such as, in 1906-07]: ‘cream, milk, jellies, flowers, string beans, cucumbers, apples, summer squash, grape-fruit, [and] piccalilli.’ . . . It became traditional to rely on private donations of fresh produce [and] canned goods . . . to feed patients.”



\$28.5 million

Contributions (in dollars, rather than in pecks of produce) to DHMC and DMS in 2009-10

Dartmouth is a top performer in federal project

In 2005, the federal Centers for Medicare and Medicaid Services (CMS) devised a five-year pilot project called the Physician Group Practice (PGP) Demonstration, to test the theory that financial incentives could motivate health-care organizations to provide higher-quality care for Medicare beneficiaries.

According to recently published data from the project’s fourth year—2008-09—five of the 10 PGPs participating, including the Dartmouth-Hitchcock Clinic, are proving CMS right on the money. The five received bonus payments totaling \$31.7 million—a share of the \$38.7 million in savings they generated for Medicare.

Bonus-worthy: A participating PGP is deemed bonus-worthy if it spends at least 2% less on Medicare beneficiaries comparable to those of other providers in the area, while performing well on a series of quality benchmarks. Successful PGPs can share in up to 80% of Medicare’s savings. In doling out bonuses during the first two years, CMS emphasized cost reduction over quality; since year three, cost and quality have been weighted equally.

Dartmouth-Hitchcock Clinic—a bonus recipient in all but the first year—has so far stockpiled \$13 million in monetary rewards, one of the highest amounts awarded any of the 10 PGPs. Much of the focus has been on improving care manage-

ment strategies, says Dr. Barbara Walters, the Clinic’s senior medical director and coordinator of the project. DH has brought in recognized experts to coach physicians and support staff on evidence-based care guidelines. Triage nurses are engaged in more active and motivational outreach; for example, patients get a call a few days before an appointment, plus a follow-up call within 24 hours of a discharge. DH has also integrated more electronic tools into day-to-day practice—for instance, charts that track vital signs and vaccinations; disease registries; and reports to providers showing their individual progress on quality benchmarks. The aim is to zero in on preventive care, reducing readmissions and costly emergency procedures.

The efforts are paying off, especially with respect to meeting the project’s 32 quality benchmarks. These were phased in gradually and now cover diabetes, congestive heart failure, coronary artery disease, hypertension, and cancer screening.

Quality: In year four, DH met 94% of the benchmarks, including targets for screening for breast and colorectal cancers. According to Jennifer Snide, a quality measurement analyst at DHMC, CMS stipulated that PGPs should perform mammograms in at least 75%, and colonoscopies in at least 61%, of patients falling within the defined age- and gender-based

guidelines. Dartmouth surpassed both those benchmarks and has consistently done well meeting benchmarks for diabetes, too. The biggest improvement was that the percentage of patients having an annual foot exam increased from 21% to 59%.

Model: The project is widely regarded as a model for accountable care organizations (ACOs), a provision of the 2010 health reform law that has received solid bipartisan support. In a recent news release, CMS administrator Donald Berwick hailed the 10 PGPs as “leaders in organizing care delivery” and as a demonstration of what the health-care sector can achieve “if we put the right incentives in place.”

JON GILBERT FOX



The rate of annual foot exams for diabetics increased from 21% to 59% under the federal project. Here, Dr. Richard Powell examines the foot of a diabetic who has already lost one toe.

But exactly what the “right incentives” are remains a point of debate. Shared savings may be a great concept, but four of the 10 PGPs have thus far never received a bonus.

“The groups who didn’t receive bonuses would tell you that they didn’t have a large enough [patient] population,” Walters says. “As well, Medicare’s 2% savings threshold is perhaps a flawed design.”

The lack of financial risk—participating physicians still receive their regular Medicare fee-for-service payments—has also been criticized. As an opinion piece in the October 2010 issue of the *American Journal of Managed Care* put it: “An approach that attempts to upset or dislocate no one” may not prove a strong enough incentive to impel physicians to change their behavior.

Right: But Walters disagrees. “Doctors want to do the right thing,” she says, “and the system should be redesigned to make it easy for them to do so—then their behavior will change.”

Meanwhile, DH is launching its own ACO through a joint pilot payment program with Anthem Blue Cross and Blue Shield. However, Walters says, it’s “still in the early stages.”

CMS is also working to transition all 10 PGPs into a newly-formed ACO program. “We’re all eager to continue the good collaboration and improved clinical care begun with [the demo],” says Walters, “and make the terms and conditions better in partnership with Medicare.”

ALISSA POH

CLINICAL OBSERVATION

In this section, we highlight the human side of clinical academic medicine, putting a few questions to a physician at DMS-DHMC.

Scott Rodi, M.D.

Assistant Professor of Medicine

Rodi is chief of the Section of Emergency Medicine and medical director of the Emergency Department (ED). He is also the founder and director of DHMC’s Center for Rural Emergency Services and Trauma (CREST). He came to DHMC in 2001.

When and why did you decide to become a physician?

There was no one moment. With three generations of physicians in my family, the choice seemed somewhat inevitable but I resisted it during most of my education. At the end of college, though, I realized I was evaluating every alternative in terms of whether it would ultimately make me a better doctor, so I gave up the fight.

What got you interested in emergency medicine?

I came to the specialty indirectly. I started off in orthopaedics but realized that I missed being involved in many other areas of medicine. I also realized that I liked delivering acute care more than elective care. Finally, the societal expectation that emergency physicians will deliver care regardless of the patient’s ability to pay is important (albeit at times frustrating) to me.



What is a typical day like for you?

In the ED, by definition, we see everything that comes through the door, so we touch virtually every specialty in medicine. A “typical” day includes everything from traumatic injuries, to cardiac problems, to psychiatric issues, to ingrown toenails and dental pain. From an academic standpoint, this can be a bit of a liability, but from a practice perspective I find it one of the most appealing things about emergency medicine.

What are your favorite nonwork activities?

Skiing, hiking, biking, sailing, and woodworking.

What websites do you use most often?

None. I proudly remain a relative Luddite.

Where would you most like to travel?

At the risk of sounding hedonistic, I’d pick exploring the islands off Southeast Asia on a wooden sailboat.

Finish this sentence: If I had more time I would . . .

In my current life, I would spend more time at home—more time with my family and more time in my workshop.

What is a talent you wish you had?

Other than being able to fly (a recurring childhood dream), I have always wished that I had some musical ability.

What do you admire most in other people?

Honesty.

What was your first paying job?

After miscellaneous jobs—like babysitting, mowing lawns, and sanding boats—my first regular paying job was a newspaper route when I was 12.

What about you would surprise people who know you?

That I spent some time in jail, and then under house arrest, in Ecuador a number of years ago.

What is the greatest frustration in your work? And what is the greatest joy?

Politics is the greatest frustration. At a national and sometimes local level, fights are fought and decisions are made that hinder, rather than enhance, our ability to give care. So we as a system spend an inordinate amount of resources responding to an ever-increasing number of policies and regulations. At an individual level, this ultimately translates to less time with patients. Which, in answer to the second part of the question, is what I still like most about my job.



PARLEZ-VOUS?: Dr. Brian Remillard, a nephrologist at DHMC and one of the clinicians who traveled to Haiti last year to help with post-earthquake relief, launched the first web-based lectures in French on renal disease for Haitian medical students.



FACTS & FIGURES

For the record



9.1%

Percentage of U.S. hospitals that, as of 2009, had implemented an electronic medical record (EMR) system of any sort

1985

Year the current Dartmouth-Hitchcock (DH) EMR was implemented

2.5 million

Number of patients now in the DH EMR system

1

Number of EMRs per patient, regardless of how many DH physicians and locations the patient visits

59,000

Number of new EMRs created in 2009, just at DH's Lebanon campus

80,000

Requests received each year by DH to release EMRs for legal, employment, medical, or other purposes (DH maintains the record and ensures its integrity, but the patient owns it)

30 million

Lines of dictation transcribed and entered into DH EMRs each year

40

Staff members in the DH Health Information Services department

4/2/11

Date when a new, improved DH EMR system goes live

SOURCES: NEW ENGLAND JOURNAL OF MEDICINE, DARTMOUTH-HITCKCOCK

A research pipeline from Tanzania to DMS

Tanzania may be a resource-poor country. Yet the East African nation boasts spectacular scenery, mighty Mt. Kilimanjaro, vast game-animal migrations, and—since 2000, thanks largely to Ford von Reyn, M.D., DHMC's chief of infectious disease and international health—an extensive program of research in HIV-AIDS.

Trial: It all began with a clinical trial of a tuberculosis vaccine in HIV-infected patients, the positive results of which were recently published. The contacts von Reyn made while working on that trial encouraged him to pursue funding from the National Institutes of Health's Fogarty International Center to support doctoral training at DMS for Tanzanians.

Two Fogarty Fellows have since completed their Ph.D.'s at Dartmouth and returned to Tanzania and opened labs there. They occupy the only life sciences research labs at Tanzania's Muhimbili University of Health and Allied Sciences (MUHAS).

One of the DMS Fogarty graduates,

Magdalena Lyimo, Ph.D., did her thesis research with DMS's Ruth Connor, Ph.D., and Alexandra Howell, Ph.D., studying factors that influence HIV transmission via breast milk. The virus can be transmitted by that means, but the infection rate is not 100%. Connor and Lyimo suspect that there may be factors in breast milk that both facilitate and inhibit transmission.

The other Dartmouth Fogarty graduate, Ted Mselle, Ph.D., did his doctoral work in the lab of DMS's Charles Sentman, Ph.D. He studied the function of human uterine natural killer cells, showing that they could inhibit HIV uterine infection through the production of natural cytokines.

Cells: A third Tanzanian Ph.D. student, Emmanuel Balandya, is still at DMS, working with Tim-



DMS faculty member Tim Lahey, far right, helped a number of Tanzanian colleagues celebrate the opening of labs there.

othy Lahey, M.D. While acclimating to New Hampshire winters, he's studying how semen impacts HIV infection of target cells during the initial transmission of the virus.

All three students had already earned M.D.'s in Tanzania.

And the Fogarty-supported training is not limited to those pursuing doctoral degrees. Seven Tanzanians have earned M.P.H.'s at Dartmouth, and a number have visited DMS for a month or two of specialized training.

The list of possible future research collaborations is both long and varied. Von Reyn already has a study in progress on a protein-calorie dietary supplement for pregnant women who are HIV-positive. Charles Wira, Ph.D., who has been active in the program from the start, is poised to further his investigations into mucosal immunity in HIV-positive patients. And Jay Buckley, M.D., is conducting an NIH-funded study of possible hearing loss in HIV-positive patients—an effect that may be due to HIV, its complications, or the drugs used to treat the virus or related conditions.

Enduring: The Dartmouth-Tanzania connection has every indication of being an enduring one. As Kisali Pallangyo, M.D., vice chancellor of MUHAS, puts it: "When [DMS trains] our colleagues, they don't just say goodbye and send them back to Tanzania, they come here with them, they stay involved, and keep the collaboration growing, and the infrastructure development stays here."

ROGER P. SMITH, PH.D.

INVESTIGATOR INSIGHT

In this section, we highlight the human side of biomedical investigation, putting a few questions to a researcher at DMS-DHMC.

Alix Ashare, M.D., Ph.D.

Assistant Professor of Medicine and of Anesthesiology

*Ashare studies the immune response to the bacteria *Pseudomonas* in humans with cystic fibrosis (CF). She joined the DMS faculty in 2009.*

What got you interested in science?

I come from a family of lawyers, so going into medicine was probably a bit of an act of rebellion. In my immunology class as a first-year medical student, I became fascinated with the host immune response to illness and actually took a leave of absence from school the following year to pursue a research project in an immunology laboratory. After that year, I was hooked.

Can you describe your research?

It focuses on the host immune response of tissue macrophages (a type of white blood cell) to bacteria such as *Pseudomonas* in cystic fibrosis patients. One project I am working on involves looking at alveolar macrophages (tissue macrophages localized to the lung) that have been isolated from patients with cystic fibrosis. We are trying to determine why these macrophages do not function as well as alveolar macrophages from healthy patients.



If you weren't a scientist, what would you be doing?

Trying to write the next great American novel.

What's your favorite nonwork activity?

I enjoy exploring the Upper Valley with my husband and our three-year-old son. We like to spend as much time outdoors as possible. We love to cross-country ski, hike, and spend time on the beach. And I enjoy reading—both fic-

tion and historical fiction. I just finished *The Double Bind* by Chris Bohjalian and thought it was awesome. I also really enjoy cooking. In a former life, I was an avid tennis player and hope to find time for that again some day.

What is stressful for you?

Clutter. I can't work if my desk is cluttered.

What do you admire most in other people?

Passion. I think it is amazing what people can accomplish if they are truly passionate about what they are doing.

What's one thing that you would change about yourself?

I would like to be more patient.

Do you use Twitter, Facebook, or other social media?

I am pretty much addicted to Facebook (but I'm really trying to cut back).

What three people would you like to have over for dinner?

John Irving because he is one of the most prolific writers of our time. Vince Vaughn because he is hilarious. And Emeril Lagasse because I can't think of anything cooler than cooking dinner with Emeril.

When you were very young, what did you want to be when you grew up?

As a child, I wanted to be a veterinarian. I have always loved animals, and I volunteered at the local animal shelter for a number of years.

What's hot in your field right now?

CF affects about 30,000 Americans and leads to a shortened life span. Most patients ultimately die from respiratory failure as a result of chronic infections. If we can figure out ways to decrease chronic infections in these patients, the hope is that this would prolong their lives.

What do you like most about your job?

The people I work with. There's a huge community of people working on clinical and scientific aspects of CF. They're all wonderful, and I feel inspired and challenged pretty much every day.



For a **WEB EXTRA** with a video clip of the dance performance in Rauner, see dartmed.dartmouth.edu/sp11/we04.

STATEMENT: New Hampshire became the first state in the nation where the governing boards of all hospitals signed a resolution to work together to improve patient safety. The Granite State already ranks first for providing appropriate evidence-based care.



BODY LANGUAGE EX LIBRIS

A modern-dance troupe. Choreography inspired by a 16th-century anatomy textbook. A library as a performance space. Those disparate elements came together when the Dartmouth Dance Ensemble put on a performance in a dramatic glassed-in space in Dartmouth's Rauner Special Collections Library, home to the most valuable books on campus.

Mayuka Kowaguchi, DC '11, the lead choreographer, says the impetus for the event came when she took a tour of Rauner.

One of the books that made an impression on her was Andreas Vesalius's *De Humani Corporis Fabrica*—meaning "On the Structure of the Human Body." She was amazed by Vesalius's beautiful anatomical illustrations. So she and the 11 other dancers in the

troupe used the images as inspiration for their movements, highlighting the human body's bone, skin, and muscles.

Kowaguchi says the performance was especially meaningful to her because it showed how science and dance—two "totally unrelated parts of [her] life"—could be brought together. And all the dancers enjoyed the chance to understand the body at an anatomical level, in a way they never had before. K.P.

THE DARTMOUTH



KIDNEY SWAP TRUMPS PATS

The worst part about her decision to donate a kidney, joked Catherine Richard of Henniker, N.H., at a press conference at DHMC, was having to miss a Patriots game. To prove that was no small matter, she sported a Pats jersey at the press conference. The best part? Richard and her sister-in-law, Kathy Niedzwiecki of Pelham, N.H., were participants in the first four-

way kidney swap arranged as part of a national pilot by the Organ Procurement and Transplantation Network. Before the pilot, paired matches had to be made on an ad hoc basis.

The other donor and recipient involved in the DHMC swap live in St. Louis, and Barnes-Jewish Medical Center was the other participating institution. "Expanding the database of willing and able live donors . . . through programs like this pilot," says Dr. David Axelrod, DHMC's chief of transplantation surgery, "enables us to maximize access to this precious resource." A.S.

From the left: Axelrod, Niedzwiecki, and Richard.

MARK WASHBURN



Dartmouth supports effort to HEAL the region

How big was a typical cookie when you were growing up? That's a question that Kristen Coats, coordinator of the Upper Valley Healthy Eating Active Living (UV HEAL) partnership, likes to ask teachers and administrators when she's visiting their schools. With that simple question, she helps them tune in to portion sizes and the nutritional quality of the food available in their schools.

"People are used to the 'super-size me' mentality," says Coats, who has a master's degree in public health. Extra-large cookies, along with sugary drinks and processed foods, have become the "cultural norm," she adds.

Changing that cultural norm is one of the goals of UV HEAL, and three other HEAL partnerships throughout New Hampshire. UV HEAL, funded in part by Dartmouth-Hitchcock and several large foundations, is made up of more than 20 local organizations, including day-care centers, schools, health-care providers, businesses, and nonprofits.

Slow: Changing cultural norms can be "a slow process," Coats admits. That's why she celebrates the small steps that UV HEAL has helped its partners make in the past two years.

One partner, the Children's Center of the Upper Valley, a day care in Lebanon, N.H., has replaced Fruit Loops with healthier cereals, created gardens for growing vegetables that go

into the kids' snacks and lunches, and secured a grant to purchase tricycles for its playground, among other changes.

Other partners, such as the Upper Valley Trails Alliance and the Lebanon Parks and Recreation Department, have worked with planning boards, city councils, and private landowners to create a four-mile greenway for biking and walking.

Fruits: In another UV HEAL project, students are competing in a game called Reach the Peak, in which they earn points for eating fruits and vegetables.

"Our students are very excited," says Joni Butler, who's been a physical education teacher at Enfield, N.H., Village School for 21 years. "They are jumping up to tell me . . . that they are eating their fruits and vegetables when I enter the lunch room." In mid-January, 105 of the school's 210 children were playing Reach

One day care has replaced Fruit Loops with healthier cereals.

the Peak. And some of their older siblings, at Enfield's Indian River School, post messages on UV HEAL's interactive website (see www.uvheal.org/) about their own efforts to stay active and improve their diets.

Having that kind of influence in Enfield, a town in the Mascoma Valley, is particularly important because that area is "a food desert," explains Coats, meaning there is no local place to buy fresh fruits and vegetables.

Last year, Vital Communities—a regional nonprofit and a UV HEAL partner—surveyed



MARK WASHBURN

Benjamin Lin is enjoying a lunch of vegetable soup at a local day care, thanks to the DHMC-supported HEAL initiative.

Mascoma Valley residents about their access—or lack thereof—to fresh produce. “We see strong evidence that Mascoma residents are interested in attracting or developing a local ‘bricks and mortar’ store that is large enough to provide quality, moderately priced fruit and vegetable options,” Vital Communities reported in December 2010. UV HEAL and its partners are now helping to figure out a way to meet that need.

While a single survey or a single greenway may not be enough to create a wholesale shift in the cultural norms of the region, Coats sees promise in the sum of such initiatives.

Sustain: “It is less about one particular program and more about how we are working together to create communities that sustain us,” says Coats. Addressing overweight and obesity problems requires “a community-wide approach,” she adds. “Everybody matters.”

JENNIFER DURGIN

DMS students find elders “kind” and “witty”

Hanging out with a bunch of retirees doesn’t sound like the way a group of medical students would choose to spend a free evening. But at Hanover’s Kendal retirement community, eight DMS students have turned out for Skills Night. They’re there to learn some of the clinical skills involved in geriatrics, and Kendal residents have volunteered to act as patients.

The students and volunteers first get to know each other over dinner. “We had surprisingly deep conversations,” DMS first-year Regina Duperval says later, “and they were really kind.”

After dinner, the students get to work. They’ll focus on cognitive function and mobility, says Dr. Stephen Bartels, director of the Dartmouth Centers for Health and Aging, since “memory loss and falling are common problems with aging.”

Gait: In one room, physiotherapist Nancy Evans shows students how to assess an elderly person’s gait, speed, and balance. “On the word ‘go,’ walk toward this line, then return to your seat,” says a student to Kendal resident Bill Griffen. He obligingly shuffles three meters to and from his chair in 11 seconds, indicating good mobility; a frail person might take two minutes or more. “Well, I’ve had both hips and a knee replaced,” Griffen quips, drawing chuckles.

Meanwhile, Dr. Linda Dacey is demonstrating how to record changes in resident Wiggy Grassi’s blood pressure as she sits upright and then stands. If the pres-

sure drop between positions is greater than 20 points, Dacey says, it indicates orthostatic hypotension, meaning the patient is more likely to fall.

Risk: “One in three people over the age of 65 falls each year,” explains Joanne Cook, a nurse practitioner at Ken-

“Memory loss and falling are common problems with aging.”

dal. “So it’s important to understand risk factors for falls and how to screen for them.”

A third group of students is carrying out mental status tests, guided by Bartels. Kendal resident Hershner Cross confidently names 23 different animals in a minute, showing “spontaneous recall of well-learned information,” Bartels says. Cross also has a good grasp of spatial relations, easily drawing the hour markers and a specific time on a clock face. But when told a story and quizzed on the details afterward, he comes up short. It’s an attention issue, Bartels explains.

“My ‘patient’ was in his mid-nineties,” says first-year student Kevin McNerney. “I was really struck by how witty he was. It was remarkable . . . to see that he hadn’t experienced much of a mental decline at all.”

“We’d discussed such

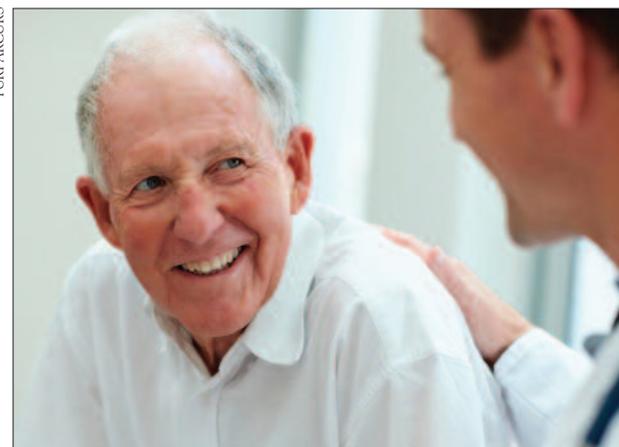
tests in class, but we hadn’t yet moved from theory to practice,” adds second-year Amy Thomas. “Actually doing the assessment helped me to understand how it works.”

Duperval is glad she attended. “I’d never considered geriatrics before, but now I’m starting to see it as a [career] option,” she says.

Thomas, on the other hand, has long planned to specialize in geriatrics and worked closely with several faculty members to organize Skills Night. She credits her interest in the field to growing up with both sets of grandparents and three great-grandparents.

“One of the fastest-growing segments of our population is people 80 and older,” Thomas says, “so we need to be trained to understand the unique challenges of treating these patients.” She hopes Skills Night will become a yearly event and help change the perception among her peers that geriatrics is stodgy.

ALISSA POH



YURI ARCURI

Preparing for situations like this was the goal of the evening.

IN SERVICE: Three DMS fourth-years, 4 clinicians, 21 Dartmouth undergrads, and a faculty fellow spent 13 days in rural Siuna, Nicaragua, in December through the Cross-Cultural Education and Service Program. Dartmouth's trips to the region began in 2001.



THEN & NOW

A reminder of the pace of change, and of timeless truths, from the Spring 1981 issue of this magazine:

"In June [1981], Dr. James Strickler will step down after eight years as dean of the Medical School." During his tenure, "the annual budget has doubled, but the deficit [he inherited] has declined steadily" and "the faculty . . . has increased by 50%. . . . As to his own plans, he will return to his former dedication as a teacher, . . . both at home and abroad."



6

Number of months that Strickler (and his wife) spent working at a refugee camp in Thailand after he stepped down as dean

30

Number of years since then (so far) that he has spent teaching and supporting global health initiatives

Granite State premeds try DMS on for size

Taking the plunge into medical school can be challenging, especially for students from rural areas. But that's just the kind of student medical schools are trying to attract, to increase the nation's pool of primary-care physicians likely to practice in underserved rural areas.

To address that dilemma, DMS offers premedical students from New Hampshire colleges a peek inside the process through its Medical Student for a Day program. The event, run by the Rural Health Scholars program, is in its sixth year and has proven so popular that it's now offered twice a year. Last November, 16 students from the University of New Hampshire, Keene State College, Plymouth State University, and Colby Sawyer College attended.

Day: Their day started at 7:30 a.m. sharp, at a first-year anatomy lecture. Many of the premeds had spent the previous night at the home of a current DMS Rural Health Scholar. Next came a tour of the School's labs, auditoriums, and library.

Over coffee, the students were then given a chance to introduce themselves and their interest in medicine. Many had been instrumental in setting up or participating in premed societies at their respective colleges, and they compared their experiences volunteering both in local emergency rooms and farther afield in places such as China and South America.

Next was a talk, given by Sally Redman, associate director of

admissions, on how to prepare a good medical school application and to stand out in an interview. Redman stressed that DMS values applicants with varied interests and with both practical and research experience.

Dr. David Nierenberg, senior associate dean for medical education, then explained the courses that medical students can expect to take and how they build on each other to help students acquire the skills they'll need to practice medicine.

Pose: During both talks, the premeds were able to pose questions, such as "Should I attempt humor in my application?" (The answer: No!)

Over lunch, the premeds were introduced to the current Dartmouth Rural Health Scholars and to DMS's dean, Dr. Wiley "Chip" Souba.

Next, Sally Kelley, assistant

director of financial aid, talked about applying for support for medical school—both loans and scholarships.

Train: The group then got a tour of the vast labyrinth of DHMC, including the Simulation Center, where they saw medical scenarios recreated using lifelike human models and scripted volunteers—a sophisticated yet risk-free environment in which to

After a debriefing, this whistle-stop tour of the medical education experience concluded with an expression of hope that some of the premeds in attendance might meet again as Dartmouth medical students in coming years.

The event is a great opportunity for premeds to become "immersed in the Dartmouth culture," says Inger Imset, coordinator of the program. "It is a feel-good event."

KATHERINE DAWSON

The event has proven so popular that it's now offered twice a year.



The 16 participants in last November's Medical Student for a Day event got their picture snapped in DMS's Faculty Conference Room—next to the current dean, Chip Souba (in the red tie), and in front of imposing oil portraits of two long-ago deans.

MEDIA MENTIONS: DMS & DHMC IN THE NEWS

Among the people and programs coming in for prominent media coverage in recent months was a Dartmouth surgeon who participated in the first paired kidney donation arranged as part of a national pilot program. “We all realize that the shortage of donors is only getting worse,” [said] Dr. **David Axelrod**, section chief of transplantation surgery at Dartmouth-Hitchcock in the



Boston Globe. Paired donations have in the past happened only on an ad hoc basis. The pilot, run by the United Network for Organ Sharing, established a national database to maximize the chance of making matches whereby a person donates a kidney to a stranger, and a friend or family member of that person receives a compatible organ in return. The national network, Axelrod told the Associated Press, “will supplement the many existing regional alliances that mix and match patients and donors.”

Time magazine recently sounded the alarm about the dangers of thirdhand smoke—“harmful compounds in tobacco residue that get embedded in clothing, hair, furniture and almost any other exposed surface.”



Among the experts quoted was a member of the DMS faculty. “We don’t know how bad it is, but there is enough evidence that it sets alarm bells off

for people who pay attention to the health of all kids,” says Dr. **Susanne Tanski**, a pediatrician at Dartmouth Medical School and coauthor of one of the first papers, published last year in *Pediatrics*, to explore the concept of thirdhand smoke.”

Wired magazine recently gave a design makeover to the reports for three common lab tests. To create patient-friendly and effective reports, the magazine “consulted

with Drs. **Lisa Schwartz** and **Steven Woloshin**, physicians at the Dartmouth Institute for Health Policy and Clinical Practice and experts in communicating data to patients, to make sure the right information gets onto the forms and the irrelevant stuff stays off.” *Wired* called the makeovers “proof of concept” in “refutation of the argument that ordinary people can’t handle their health.”

In covering a horrifying story about schoolchildren who discovered a burning body, the *Detroit Free Press* turned to the DMS psychiatrist who heads the VA’s National



Center for Post Traumatic Stress Disorder. “The most important steps to take are for people to be aware of how this may affect kids, to provide a supportive environment, to provide safety and to remove children from any reminders of violence or death through violent means,” Dr. **Matthew Friedman**, the center’s executive director and a professor at Dartmouth Medical School,” told the *Free Press*.

Bloomberg.com recently quoted a Dartmouth orthopaedic surgeon in a story on an ineffective but popular form of back surgery. “It’s amazing how much evidence there is that fusions don’t work, yet surgeons do them anyway,” said Dr. **Sohail Mirza**, a spine surgeon who chairs the Department of Orthopaedics at Dartmouth Medical School in Hanover, N.H. “The only one who isn’t benefiting from the equation is the patient.” Mirza was also tapped for expert commentary by the



Milwaukee Journal Sentinel, regarding a study which showed that doctors who have financial ties to a product’s manufacturer had better success with the product than did those without any financial ties. “People may be looking at the success of the

[spine surgery product] in a different way if they knew these relationships existed,” Mirza was quoted as saying in the *Journal Sentinel*.



When *Newsweek* took on the issue of digital versus film mammograms—and whether Medicare should be paying for the newer, more expensive digital technology—the magazine cited Dartmouth research.



“In 2008, a paper in *Annals of Internal Medicine* found that digital mammography is not cost effective compared with film: that is, it does not save any more lives per dollar spent,” the article noted. “Over time, film mammography is going to cease to exist,” says lead author Dr. **Anna Tosteson** of Dartmouth Medical School. “But here is one thing that’s certain: there is no evidence that one should pay a premium for digital mammography.”

An ABC News report about soul singer Aretha Franklin’s battle with pancreatic cancer quoted a Dartmouth oncologist. “Just 10 percent to 20 percent of the 40,000 pancreatic cancers diagnosed each year are operable, . . . said Dr. **J. Marc Pipas**, director of GI oncology at the Nor-



ris Cotton Cancer Center at Dartmouth-Hitchcock Medical Center in Lebanon, N.H. Although the national standard of care has been to operate first on pancreatic tumors, then follow up with chemotherapy and radiation, Dartmouth and M.D. Anderson Cancer Center in Houston have been leaders in pretreating pancreatic tumors with radiation and chemotherapy to shrink them as much as possible to increase the odds of successful surgery. “An incomplete resection doesn’t help you live longer,” Pipas told ABC News.



BACKLIST: Dr. James Weinstein, the founder of DHMC's Spine Center and the leader of the nation's largest randomized trial of surgical versus nonsurgical ways of treating back pain, was chosen by the bimonthly *Becker's ASC Review* as one of the 100 best spine surgeons in the U.S.

DMS research income tops \$160 million in FY10

Funding for scientific research in the U.S. most likely will be very tight in coming years. But at least this past fiscal year, Dartmouth Medical School did very well in bringing in grant and contract income.

Awards: Thanks mainly to the American Recovery and Reinvestment Act (ARRA), awards to DMS in fiscal year 2010 shot up 39% over the previous fiscal year. Dartmouth Medical School researchers brought in \$160.2 million in FY10, compared to \$115.6 million in FY09.

The amount awarded for bench research (as opposed to funding for clinical trials, equipment, construction, or other purposes) was up 33% over FY09 (\$114.8 million, compared to \$86.1 million).

And nearly all departments at DMS did well in FY10. The Department of Surgery, for example, brought in more than \$12 million, thanks in good measure to an ARRA-funded construction grant to build an Advanced Surgical Center at DHMC; the facility will be used largely for surgery-related research.

Other departments that benefited considerably from ARRA were Orthopaedics, Pathology, and Pediatrics.

Dollars: In future years, however, not only will the stream of ARRA funding eventually dry up, but there's a good likelihood that cost-cutting by Congress will result at least in stagnation and perhaps in a decline in the dollars available from federal sources—including the Nation-

al Institutes of Health (NIH), which is a major source of funding for research at DMS.

A further change in the research funding environment is that the NIH grant process has recently been modified. Grant applications now have a shorter format—with a limit of 12 pages instead of the previous 25, so researchers have had to learn how to explain their projects more concisely. And there's a new scoring system, too, one that stresses innovation "a lot more," according to Jennifer Friend, DMS's director of research support services.

Furthermore, if a researcher's grant was not funded, it used to be possible to submit up to two amended proposals to the NIH; now just one is allowed.

Variables: All of those changes, points out Friend, amount to "a

Federal funding "supports scientific discovery, but also supports jobs."

huge number of new variables. . . . It's a new game."

Lung: But DMS faculty members seem to be adapting well to the "new game." Dr. Bruce Stanton, for example, a pulmonary physiologist, is the principal investigator for three major grants. One is aimed at increasing interconnectivity and internet access among research institutions in northern New England to enable them to better study lung disease; most of these funds went toward hardware. Dartmouth's Lung Biology Center, which Stanton directs, has also "done very well," he says. That effort recently received a four-year renewal grant from the Cystic Fibrosis Foundation.

"We're very pleased with our funding stream," Stanton says. "I think part of the reason is that we . . . do team science and that seems to be the future of successful funding . . . to collaborate, interact, and do team science that has a translational and clinical component."

Jobs: Dr. Duane Compton, a biochemist and DMS's new senior associate dean for research, brought in two "supplement" grants funded through ARRA. One enabled him to hire another researcher in his lab, and the other was a training grant supporting two new Ph.D. students. Compton says this is an "incredibly important" point—the fact that federal funding for science "supports scientific discovery, but also supports jobs . . . generates jobs."

MATTHEW C. WIENCKE

Worthy of note: Honors, awards, appointments, etc.

The American Association for the Advancement of Science recently elevated three members of the DMS faculty to the rank of fellow. **Charles Barlowe**, Ph.D., a professor of bio-



chemistry, was recognized for "distinguished contributions to the field of protein and lipid trafficking, particularly for elucidating molecular mechanisms of vesicular transport between endoplasmic reticulum and Golgi complexes."



Ta-Yuan "T.Y." Chang, Ph.D., a professor of biochemistry, was honored for "distinguished contributions to the understanding of cholesterol metabolism and its role in human disease." And



William Wickner, M.D., a professor of biochemistry, was recognized for "his singular efforts in the isolation and characterization of the bacterial secretory protein translocation complex and the complete machinery for yeast vacuole fusion."

George O'Toole, Ph.D., a professor of microbiology and immunology,

continued on page 58

JON GILBERT FOX



So-called bench research—basic, laboratory-based biomedical research—rose 33% at DMS from FY09 to FY10.

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Worthy of note

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was recently elected to membership in the American Academy of Microbiology, the honorific leadership group of the American Society for Microbiology, the world's oldest and largest life science organization. Membership in the academy recognizes scientists who have made "outstanding contributions to microbiology." See dartmed.dartmouth.edu/f10/f101 for insight into O'Toole's research.

Bruce Stanton, Ph.D., the Andrew C. Vail Memorial Professor of Microbiology and Immunology, was recently presented with the University of Maine's Distinguished Honors Graduate Award. Stanton is a 1974 graduate of UMaine's Honors Program.

Jeffrey Cohen, M.D., a professor of neurology, was appointed to the Peripheral and Central Nervous System Drugs Advisory Committee of the Food and Drug Administration (FDA). The committee advises the FDA commissioner and evaluates data concerning the safety and effectiveness of drugs for use in the treatment of neurologic diseases.

Duane Compton, Ph.D., a professor of biochemistry, has been named senior associate dean for research at DMS. One of his new responsibilities is chairing the Biomedical Research Council, a committee that will guide the strategic direction for research at DMS. He has been a member of the Dartmouth faculty since 1993. (See page 50 for more on his work.)

Shaofeng Yan, M.D., Ph.D., an assistant professor of pathology, received the 2010 Hitchcock Foundation's Tiffany Blake Career Development Fellowship. The fellowship is awarded to a young Dartmouth investigator who is committed to clinically oriented research and translating that research into effective treatments for patients.

Errata: An article in the Vital Signs section of our Winter 2010 issue, about a partnership between Uruguay and DHMC's Epilepsy Program, stated that Mark Natola, DHMC's manager of neurodiagnostics, was a member of a Dartmouth team that traveled to Uruguay in 2002; although Natola has been very active in the partnership over the years, he did not participate in the 2002 trip. And the Lisa Dwyer who commented in the Winter Letters section about cystic fibrosis research lives in Oshkosh, Wis., not Hopkinton, N.H. We regret the errors. ■

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