

## F A C T S &amp; F I G U R E S

## Life-and-death matter

## A rough, tough cough: Was it, or wasn't it, the whooping kind?

In the spring of 2006, a number of DHMC employees began exhibiting classic signs of pertussis, or whooping cough—runny nose, watery eyes, a slight fever, and a severe, repetitive cough that can sound like a “whoop” as the person gasps for breath. The disease can even be fatal for infants or vulnerable adults, such as those with cystic fibrosis. (The vaccinations that protect children from pertussis, diphtheria, and tetanus don't begin until two months of age, and the protection wears off by adulthood. And until very recently, there was no adult booster.)

Dr. Kathryn Kirkland and her DHMC infection control team sprang into action: screening and testing almost 1,000 employees (16% of the staff); ordering ill people to stay home; giving prophylactic antibiotics to 1,300 contacts of suspected cases; and vaccinating over 4,500 people (72% of the staff) in a three-day period. There were 134 suspected cases, with 98 of them considered positive (33 definite and 65 indeterminate) based on a molecular test called polymerase chain reaction (PCR).

**Cold:** “Once you conclude pertussis is circulating, then any respiratory symptom has to be considered as possibly suspect pertussis,” Kirkland explains, “because early in the first week of the illness, the symptoms are just cold symptoms—runny nose, runny eyes, congestion. That's



1425

**Year the word “palliative” (meaning “that relieves the symptoms of a disease or condition without dealing with the underlying cause”) was first used, according to the *Oxford English Dictionary***

1967

**Year of the founding, by Dr. Cicely Saunders, an English physician and nurse, of the world's first hospice**

1967

**Year the phrase “palliative care” (meaning “care for the terminally ill and their families”) was first used, according to the *Oxford English Dictionary***

1980

**Year Dame Cicely Saunders was knighted by the British Empire**

2003

**Year Dr. Ira Byock was named director of palliative care at DHMC**

9,813

**Number of deaths in New Hampshire in 2001**

193

**Number of new patients receiving palliative care at DHMC in 2002**

602

**Number of new patients receiving palliative care at DHMC in 2006**

30%

**Percentage of U.S. hospitals with a palliative-care program in 2006**

SOURCES: OXFORD ENGLISH DICTIONARY, NEW YORK TIMES, NEW HAMPSHIRE BUREAU OF HEALTH STATISTICS DATA MANAGEMENT, MEDLINEPLUS, DHMC

the time at which people are the most contagious.”

Then, months after the outbreak ended, DHMC officials announced that it might not have been pertussis after all. Follow-up testing failed to confirm the PCR results. The 27 specimens sent to the state health department for traditional culture testing were negative, and those sent to the Centers for Disease Control for PCR yielded just one positive result.

Diagnosing illnesses like pertussis is complicated, and positive results from molecular tests are hard to confirm. A culture test is still considered the gold standard, though it is less sensitive and may not detect individuals with mild infections.

**Gel:** The traditional way of “identifying a bacterial illness is to actually grow up the bacteria,” says Dr. James AuBuchon, chair of pathology at DHMC. “You take a sample from whatever site would be infected with the bacterium, like the throat—nasopharynx in the case of pertussis. That swab [is] then smeared on an agar gel that has nutrients that allow the organism to grow. And the organism, if present, would multiply and ultimately would become visible.”

An additional problem with culture testing is that it takes several days before the bacteria have multiplied enough to be detectable. So clinicians have begun relying on fast molecular tests. In a situation like DHMC faced, fast testing is essential to protect vulnerable patients.

“We typically do about 200 [pertussis tests] a year and we did



Kathy Kirkland, left, and Elizabeth Talbot found a silver lining in a pertussis scare.

1,300 in a month and a half,” says Dr. Gregory Tsongalis, DHMC’s director of molecular pathology. “We were getting frequent pleas from the leadership to turn these tests around as quickly as possible, because so many people presented for care that we were in danger of not having enough staff to run the institution.” Luckily, 90% of the screened employees tested negative for pertussis. The other 10% had either equivocal or positive findings and so had to be treated. “Equivocal results are typically associated with individuals who have low levels of infection that may not be clinically significant,” Tsongalis explains.

PCR tests are highly sensitive and can detect tiny numbers of bacteria even if the patient has no active infection. But they may be positive in cases where older methods do not detect disease, and the import of a positive result is not always clear.

“In any of these PCR tests you start out with what’s called a primer—that is, a short length of DNA that is meant to mimic the DNA that would be found in the bacterium you’re trying to identify,” says AuBuchon. The bacterial DNA binds to the primer DNA, and the enzyme systems

“identify this coupling and then produce more DNA that ultimately gets amplified and identified.” DHMC’s assay has 50 to 100 copies of the DNA target per bacterium. The CDC used an assay with only one target per organism. “So,” says AuBuchon, “it was easier for us to find [pertussis] because of the 100-fold natural amplification.”

Pseudo-epidemics of pertussis have occurred elsewhere, including Children’s Hospital Boston; definitive tests failed to confirm the illness there, too. The molecular pathology community, which has used PCR-based pertussis testing for over 10 years, is working to further develop the tests and their interpretation. For example, DHMC is “sending blinded, unknown samples of pertussis . . . to 30 labs around the country,” says Tsongalis, who is president-elect of the Association of Molecular Pathology.

**Screen:** DHMC learned a lot from the experience. “We were able to aggressively screen our health-care worker population,” Kirkland says, giving her “hope for the potential for controlling the next unknown epidemic, whether that’s pandemic flu or the next SARS or whatever.”

LAURA STEPHENSON CARTER

## Around the world in 80 (or so) minutes

If “geography class” conjures up images of memorizing capital cities and principal products, think again. A course called Global Health and Society is one of the popular offerings of Dartmouth College’s Department of Geography. This winter, some 50 Dartmouth undergraduates signed up for the course, which is taught by Drs. Lisa Adams and John Butterly, members of the Medical School faculty. An outgrowth of Dartmouth’s Global Health Initiative, the course explores the epidemiology and social impact of infectious diseases in the developing and developed world. Think AIDS and Ebola instead of Cairo and cotton.

Adams’s own interest in international health had its roots at DMS, where she earned her M.D. in 1990. She did a primary-care elective at a Navajo reservation in Tuba City, Ariz. Then, during her residency at Harvard’s Cambridge Hospital, she did an elective at a Navajo reservation in Shiprock, N.M.

“That started the spark,” says Adams, who at the time thought that a career with the Indian Health Service was probably in her future. She loved working in different cultures and even intended to learn the Navajo language. But later she decided to explore international health. A third-generation Albanian, she managed to set up a six-week elective on the cardiology unit of a hospital in Albania.

“That was the life-altering experience. I said, ‘This is what I

want to do,’” she recalls. Soon after completing her residency in the mid-1990s, she worked on tuberculosis-prevention projects in Kosovo, Albania, Bulgaria, South Africa, Tanzania, and other countries. Then for a couple of years she ran a TB-control program in New York City, while continuing to do international consulting work.

**Trips:** Along the way, she reconnected with DMS faculty doing international health work. In 2003, she was hired as the coordinator of Dartmouth’s Global Health Initiative and as the program director of DMS’s DarDar pediatric HIV treatment program in Tanzania. She makes several trips there each year and continues to consult on international TB projects, too.

She teaches at DMS as well, including an elective that “encouraged students to think beyond the health concerns of the United States,” says second-year medical student Dan Kaser. “Dr. Adams is a dynamic teacher,” he adds. She also works with the Dartmouth International Health Group, helps bring in speakers on international health topics, and mentors students who travel abroad.

In the undergraduate course, “we focus on infectious diseases, so [students] . . . understand the key causes of global morbidity and mortality,” Adams explains. The topics on the syllabus range from the “micro”—basic concepts of epidemiology—to the “macro”—the political, economic, and ethical aspects of provid-



**RISKY BUSINESS:** DMS Drs. William Black and John Baron wrote an editorial in the *Journal of the American Medical Association* about a study—on the value of routine CT scans for those at risk of lung cancer—that has drawn a lot of media attention.

ing health care on a global scale.

“This course [provides] a lot of the basic background information that needs to be understood before entering the world of global health,” observes freshman Frances Vernon, who hopes one day “to help shape future public-health policy in developing countries.”

Senior Brian Christie, who is also interested in a career in international health, adds, “I had no idea that so much about global health is prevention.” After graduation, he plans to work in a small village in Kenya, helping to create a self-sustaining community of AIDS orphans and their elders; he expects eventually to attend medical school.

Adams’s enthusiasm for the course is infectious. “I’m really excited,” she says, “that John Butterly and I, as Medical School faculty, are able to cross over and do teaching at the undergraduate level. It’s nice that this kind of cross-fertilization happens at Dartmouth.”

Laura Stephenson Carter



Adams, shown in Kosovo in 1996, today teaches global health at Dartmouth.

## A NOTES-worthy sabbatical in London

When DARTMOUTH MEDICINE last visited Dr. Richard Rothstein, in 2005, he was sitting at a computer console at DHMC, manipulating a robot to perform virtual incisionless surgery on a research model.

**Actual:** Today he sits 3,300 miles away, at the Royal Veterinary College in London, performing actual incisionless surgery on pigs. The chief of gastroenterology at DHMC, Rothstein is on sabbatical, he explains by e-mail, to immerse himself “in the field of NOTES, to identify those emerging technologies that will have applicability to future human clinical work back at Dartmouth.”

NOTES stands for Natural Orifice Transluminal Endoscopic Surgery. It means running an endoscope with miniature surgical tools through a natural opening in the body to reach an internal organ. For example, entry via the mouth and esophagus makes it possible to pass through the stomach wall to reach the abdominal cavity. Or the pelvic region can be reached via the penis, vagina, or anus.

So an operation that required an incision measured in inches when done by open surgery, then only a half-inch “band-aid” incision for laparoscopic surgery, may soon require no external incision at all. The reason for the evolution? Less pain, shorter recovery, and no visible scars.

In London Rothstein is “concentrating on identifying the most successful methods of endoscopic sewing.” That, he says,

is key to the acceptance of NOTES. “There are many hurdles for natural orifice surgery,” he adds, including prevention of infection, visualization of the operative field, and control of hemorrhage. But “the show-stopper,” he believes, will be “reliable closure technique—a tight seal is the key to surgical success. This is the reason for a focus on sewing devices and techniques during this sabbatical.”

Why Royal Veterinary? He chose it, Rothstein says, “so that I could work with Professor C. Paul Swain, a long-time friend and academic gastroenterologist.” Swain’s team has been a pioneer in NOTES and in developing devices, including an endoscopic sewing machine.

**Cavity:** Describing his sabbatical work, Rothstein says that “after cutting an entry hole into the abdominal cavity through the stomach or colon, via natural orifices, we pass the endoscope into position to manipulate, biopsy, remove, or join various organs and structures.” Then, because successful closure of the divided tissue is paramount, he is assessing the accuracy, ease, and effectiveness of various sewing devices and techniques.

U.S. surgeons have yet to perform a NOTES procedure on a human, but physicians in India and Brazil have. In India, Rothstein reports, “the patients did fine,” though the devices and techniques proved difficult to use, so the clinicians imposed a moratorium on further procedures pending improvements.



LIA ROTHSTEIN

Rothstein in repose in Trafalgar Square.

When asked how long he thinks it will be before NOTES is approved in the U.S., Rothstein looks to the past: “When laparoscopic surgery emerged as an alternative to open procedures, there was a great deal of skepticism, derision, and disbelief on the part of practicing surgeons.” But the “patients pushed the skeptics, and the outcomes convinced everyone.” The evolution of NOTES, he opines, will take a similar path.

Whatever the timing, he says that DHMC offers “a superb environment for the development of NOTES” and that his colleagues are “most supportive.”

Rothstein serves on a national oversight committee called NOSCAR (Natural Orifice Surgery Consortium for Assessment and Research). “Dartmouth was an early entrant into the field,” he says, and has collaborated with institutions in Texas, England, Germany, and Sweden. As the discipline develops further, he adds, it will be important to continue “to promote collegiality and minimize competition.”

JAMES DICLERICO

**PRIMARY CARE:** That's "primary" as in politics, not medicine. The presidential candidates for 2008 are being invited to give "health policy grand rounds" talks at DHMC, with a focus on substance rather than sound bites. The series was first held before the 2004 election.



## When "once upon a time" comes true

Real-life stories can sometimes be just like fairy tales. Imagine a terrible murder, a five-year-old orphan, and a beautiful castle where a little girl can have anything she wants. But all that she wants is straight legs.

Such a tale is the real-life story of Wafica Brooks, L.N.A., who works on the neurology unit at DHMC. She was born in Beirut, Lebanon, where she witnessed intruders kill her mother in their home. Her father was unable to care for her, so Brooks lived in an orphanage until she was 11. As she grew, her legs became more and more bowed due to a genetic condition—vitamin D-resistant rickets—that causes a deficiency of calcium.

She went to live in a "castle" in America when a wealthy couple from Marblehead, Mass., sponsored her on a medical visa. Brooks spent much of the next 18 months in a Massachusetts

hospital undergoing one surgery after another. Several people wanted to adopt her, and her father gave his permission so that she could have a better life. She joined the family of Ernest and Lorraine Shand of Ascutney, Vt. That's when she met the fairy godfather of this tale—a doctor in Claremont, N.H.

**Smile:** Dr. Robert Shoemaker had been an orthopaedic surgeon at the Hitchcock Clinic from 1955 to 1962 and later worked in several other Upper Valley hospitals. "This little girl with the beautiful smile wanted straight legs," he remembers.

While Brooks's metabolic problem was treated by another doctor, Shoemaker performed the rest of the surgery she needed over the next two years. "The risks of surgical correction were immense," Shoemaker says, with the loss of her legs "a realistic concern." But Brooks elected to

proceed. She recalls that Shoemaker was always the one who took off her casts. She was afraid, and he'd take the time to explain things to her. "He was definitely a great doctor," she says.

Over the next 25 years, the two lost contact with each other. Brooks earned her L.N.A. and worked as a nurse's aide until the first of her two sons was born. She became a stay-at-home mom, then after a divorce renewed her license and got a job at DHMC. She loves her work and is proud that she can support herself.

"I've always been on my legs," Brooks says. "I'm not a desk-work person. I'd rather help people and wait on them, so the surgery helped me do that."

**Tale:** But that's not the "happily ever after" of this tale. In November 2006, Brooks came to work one day and saw "Robert Shoemaker, M.D." on her daily sheet. When he awoke, she went into his room and said, "Do you remember me?" Shoemaker, still recovering from head surgery, put on his glasses. "I saw the smile, there was no question. I said 'Wafica.' It really was a pang. Our relationship had been so positive for me. Now, the positions were reversed. I was the recipient of her care."

Wafica Brooks thinks that her real-life fairy tale has been for a purpose and that she is in a caring profession because of what she has been through—and because of all the people who cared for her, including Robert Shoemaker, the doctor who made her dream come true.

ROSEMARY LUNARDINI

## Medicine and music are in perfect harmony for Rebecca Rotello

Ah, the hectic life of a third-year medical student. Caring for patients, writing up cases, going to choir practice . . . Choir practice? For third-year DMS student Rebecca Rotello, singing is a priority—one that even the heavy demands of her clinical clerkships cannot preclude.

**Voice:** "I've been singing since I was in grade school," says Rotello, an alto. But it wasn't until high school that she began to take singing seriously. "One of my directors said, 'You've got a pretty good voice, you should take voice lessons,'" Rotello recalls. She continued with lessons through college.

When Rotello entered DMS, a fellow student suggested she try out for the Handel Society, Dartmouth College's 200-year-old choral group. Rotello cites good time-management skills as key to balancing the demands of medicine and music. In addition, she says the support she's received from DMS faculty and the Handel Society director has been instrumental in her ability to pursue both her passions. For example, she explains that she "was allowed to switch a third-year rotation with a rotation normally done in the fourth year. . . . And the choral director has been flexible with me in terms of rehearsal attendance."

It was this flexibility that allowed Rotello to join the chorus for an international tour in December. "It was a fantastic experience."

JON GILBERT FOX



It was a serendipitous ending to a real-life fairy tale when nurse's aide Wafica Brooks, right, and orthopaedic surgeon Robert Shoemaker, left, met up at DHMC.



Rotello paused for this photo op while in Austria with the Handel Society.

rience,” she says. They visited Austria (performing in Vienna and Salzburg) and Italy (performing in Verona and Florence). For Rotello, who had never been to either country, the highlight “was singing for Sunday morning mass at the Dom in Salzburg,” she says. “It was such a beautiful space to sing in, I couldn’t believe I was actually there. I had to pinch myself.”

Rotello is the first one in her family to attend medical school, but her love of music clearly has genetic roots. “My dad has been a church choir director for as long as I can remember,” she says. “And one of my brothers is a singer. We have a lot of fun when we get together.”

**Outlet:** She finds singing a wonderful diversion. “Medical school can be stressful at times, but music is relaxing,” she says. “I think I am more engaged and more focused [on school] because I have this outlet.” She’s still not sure what specialty she’ll go into. But there’s one thing she is sure about: “Music will always be a part of my life—it has to be.”

ANN PATTERSON

## CLINICAL OBSERVATION

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

**M. Shane Chapman, M.D.**

**Associate Professor of Medicine (Dermatology)**

*Chapman’s clinical interests include the nonsurgical treatment of melanoma, synthetic skin grafting, cosmetic laser surgery, dermal fillers, biologic psoriasis therapy, and dermatology clinical trials. He has been at Dartmouth since 1999.*

**How did you become interested in dermatology?**

I had my first experience with dermatology as an intern. It was fun! As dermatologists, we really, truly help patients multiple times a day, which I did not think I could accomplish in many other specialties. Dermatology is a very positive branch of medicine.

**Are there any misconceptions people have about your field?**

Yes. Many. Most people (including government officials) think dermatologists are acne-only doctors, that we do not have intensely ill patients, that we never have emergencies, and that skin diseases are easy. It is true that the majority of our patients do have straightforward, diagnosable, treatable conditions, but there are many skin problems that remain a challenge and a concern to patients. When I left internal medicine for dermatology training, my medical mentors told me that I would be bored. It has been 11 years. I am still waiting for that first day of boredom!



**What’s your favorite nonwork activity?**

Golf, mountain biking, and just walking in the woods.

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

Sleep. Read. Spend more time with my children.

**What do family and colleagues give you a hard time about?**

I can’t dance and I am a neat freak! And I need to exercise more.

**What’s the toughest lesson you ever had to learn?**

No matter how hard I try, not everyone is going to like me.

**What famous person, living or dead, would you most like to spend a day shadowing?**

Thomas Jefferson. He was so much more than a president. He was a builder, an inventor, a thinker, a visionary—a true Renaissance man. Also, I am from Louisiana, so I owe him for buying that land.

**If you could travel anywhere you’ve never been, where would it be?**

Africa. Besides the animals, flora, and climate differences, there is something unique and interesting about a continent with less development, less industry, and less commercialism. Who knows, perhaps less is better.

**If you won \$1 million, what would you do with it?**

Pay off my student loans and spend a year in Africa.

**What about you would surprise most people?**

I am very shy!

**What music is in your CD player right now?**

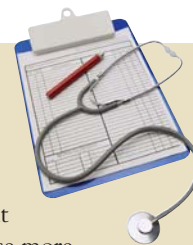
Fats Domino, Percy Sledge, U2.

**What historical event would you most like to have been present at in person?**

The American Revolution. We glorify our past a lot, and perhaps it was indeed a great time to live, but I’d like to see firsthand how hard daily life was then. Those who survived and thrived had to be tough, smart, and optimistic. They wanted more. I think this is where we Americans get our insatiable thirst for more.

**What’s one thing that you would change about yourself?**

To learn to go slower, have more patience, and enjoy each and every moment of every day.



**GOOD CALL:** Dartmouth economist Douglas Staiger coauthored a paper with good news about the predicted nursing shortage. The paper projects that with more people entering nursing later in life, the shortage could be cut from 760,000 to 340,000 by 2020.



THEN & NOW

A reminder of the pace of change, and of timeless truths, from the Fall 1982 issue of this magazine:

In an article titled “Modern Medicine and Human Values,” Dr. Gene Stollerman, DC ’41, wrote: “The dehumanization of medicine by medical technology and the organization of our health care make it at times virtually impossible to establish and sustain a prolonged doctor-patient relationship. The patient is faced with . . . a succession of specialists for each of his body systems, for each member of his family, and for each type of care.”



49

Number of references to “doctor-patient relationship” today on DMS websites

Year One

When DMS students begin “exploring firsthand the doctor-patient relationship”

No butts about smoking cessation at DHMC

The fact that smoking is the most preventable cause of death isn’t news. Yet each year more than 400,000 Americans die from smoking-related illnesses. Nevertheless, “it’s not easy to quit,” admits DHMC cardiologist John Butterly, M.D. He was a smoker himself for 15 years and used nicotine gum to finally kick the habit in 1989.

Butterly is one of a number of DHMC clinicians engaged in a concerted effort to now help patients, employees, and community members kick the habit. “It’s surprising how many people really, really want to quit but feel hopeless about it,” says Colleen Warren, R.N., one of the leaders of the stop-smoking effort.

In January 2006, DHMC secured a grant from the New Hampshire Department of Health and Human Services to do tobacco screening and intervention with hospitalized patients. Before that, there was “no systematic process to screen or assist tobacco users at DHMC,”

says hospitalist Stephen Liu, M.D., who began working on smoking cessation in 2003, as a resident in DHMC’s leadership preventive medicine program.

**Pilot:** With the grant, Warren and Liu helped to develop a standard process for offering smoking cessation advice to hospitalized patients, educational sessions for caregivers, and resources for patients. They also ran a six-month pilot intervention on two inpatient floors, and the number of patients assessed went from 2% to 85%. “What really seems to work,” Warren says, “is nicotine replacement therapy combined with social support.”

“The most exciting piece of news,” says Liu, “is that the hospital has now funded a full-time tobacco treatment coordinator.” Ellen Prior, R.N., just hired for the position, has actually been the head of DHMC’s tobacco-treatment team—50-some nurses, nursing assistants, and social workers—since April 2006. She hopes to make DHMC’s tobacco

cessation efforts “a seamless system for patients, visitors, and employees. It takes a lot of teamwork,” she says.

DHMC employees who wish to stop smoking can get help, too: counseling, as well as nicotine replacement therapy and cessation medications, are available at no charge. In addition, DHMC is working with the community to help promote stop-smoking efforts, says N. Carr Robertson, director of community health improvement.

Medical students have been active in smoking cessation efforts as well. Some provide individual counseling at the local free clinic. Second-year student Ben Snyder serves on a task force to make the Dartmouth College campus smoke-free; he’s also helping develop a program to educate schoolchildren about tobacco and a quick-intervention smoking-cessation kit for third- and fourth-year students to use on their clinical rotations.

What’s more, students have been lobbying for state legislation related to smoking prevention and cessation, and the DMS student government endorsed a recent bill prohibiting smoking in New Hampshire restaurants and bars.

**Deadly habit:** “This is not about being against smokers,” emphasizes Butterly, “but against smoking. Smoking is a deadly habit, an addictive habit, and doesn’t just affect smokers, but those around them.”

“We’re not judging you,” Warren says to smokers. But “we have the tools to help you quit.”

Laura Stephenson Carter



MARK WASHBURN

The smoking cessation effort at DHMC “takes a lot of teamwork,” says one player.

## Transparency and advocacy improve the CF outlook

**M**y daughter was literally starving to death, right in front of our eyes,” recalls Donald Kreis, the father of a young DHMC patient. “Nobody was telling us why that was happening. It was scary for first-time parents, even when one of them is a doctor.” Kreis’s wife is Dr. Jennifer Keller, a 2001 graduate of DMS and now an anesthesiologist at DHMC. Their daughter was only four months old when they noticed that something was wrong with her.

The diagnosis? Cystic fibrosis (CF). Thick mucus blocking the ducts in the baby’s pancreas prevented digestive enzymes from doing their job. “The cure for that is pretty simple,” says Kreis. “You just replace the digestive

enzymes that aren’t getting to the small intestines. We have pills that do that now.”

CF is a chronic, progressive disorder caused by inheriting two copies of a defective gene. Mucous glands in the respiratory, digestive, and reproductive systems produce thick, gluey secretions. People with the disease are prone to chronic lung infections and are unable to absorb fats and other nutrients. In the U.S., about 30,000 children and adults have CF, and more than 10 million people carry one copy of the defective CF gene.

At one time, children with the disease died before they reached first grade. But today—with antibiotics to fight infections, medications to thin mucus, therapies to alleviate symptoms, and better understanding of how to maintain nutrition—people with CF can survive well into adulthood. Kreis’s daughter, now five, takes a number of medications and for 40 minutes a day wears a vibrating vest to loosen the mucus in her lungs.

**Data:** CF care, as Kreis and Keller have discovered, works best when it’s a partnership between families and caregivers. Dartmouth has been a national leader in spreading the word of that approach. To foster such partnerships, the national CF Foundation recently began publicly reporting health outcomes for more than 115 accredited CF centers. The data ranges from lung function to nutritional status. Dartmouth’s CF center has been publishing such data on

the DHMC website since 2005.

“Dartmouth, I think, has really been at the forefront of seeing the virtues of this kind of transparency,” says Kreis. But, he cautions, “this national transparency is not an occasion for individual CF patients . . . to switch centers if the data from their center troubles them. What it really calls people to do is to . . . figure out how to make your center better able to be as high achieving as the best center.”

Kreis made that point in a recent CF Foundation webcast in which Dartmouth was well represented. Both Kreis and DMS’s Dr. Worth Parker participated in the national discussion about CF care. “The care centers have done remarkable work improving the quality of life for those with the disease,” says DMS’s Dr. Gerald O’Connor, who chaired the expert committee that developed the CF Foundation reporting program. “The reporting of this data is an important sign of the shared responsibility of clinicians and patients.”

Keller and Kreis also served on a national task force to build awareness about the value of family-provider partnerships and were founding members of New Hampshire’s CF Patient/ Family Advisory and Advocacy Council. Among the group’s accomplishments have been lobbying successfully for CF screening of all newborns in the state. Early diagnosis can increase life expectancy. So far about half of the 50 states have newborn CF screening. “I’m working on the other half,” says Kreis.

Laura Stephenson Carter

## THEN & NOW

**A reminder of the pace of change, and of timeless truths, from 1943’s *Fifty Years of Service*, a history of Mary Hitchcock Memorial Hospital:**

“On May 18, 1893, a girl of 13 . . . was admitted to the Mary Hitchcock Memorial Hospital, the doors of which had been opened a few days before. Her difficulty was noted as ‘hip joint disease.’ . . . After a period of observation, an operation was performed, from which she made a slow recovery. On August 8 she was discharged with the notation ‘improved.’ This was case No. 1 in the records of the Hospital. In the 50 years which have since elapsed, some 74,000 sufferers from one physical ailment or another have followed in her train.”



**21,254**

Number of inpatients discharged from DHMC in 2005 alone



Don Kreis, pictured with his daughter, is combating CF on several fronts.

**RED ZONE:** The U.S. spends \$600 million a year to test the blood supply, DMS's Dr. James AuBuchon told the *Wall Street Journal*. One of the first U.S. hospitals to diversify its blood sources, DHMC began its own blood donor program in 1996.



## HERE COMES A CLOWN

**P**atch Adams taught me that joking around at the bedside to help distract and relieve the suffering of a patient is a way to show that you really care about that person," says second-year medical student Jonathan Strutt. Adams, a noted comedian-doctor, runs the Gesundheit! Institute, where Strutt recently spent three days learning about topics ranging from relief of suffering through clowning to equal access to health care.



Strutt felt that Adams "said it best when he mentioned, 'Entertaining is not my primary goal. I am looking to relieve suffering.'" Strutt's own efforts in that regard include playing the mascot of the Children's Hospital at Dartmouth (CHaD)—a friendly blue dinosaur known as the CHaD-a-saurus.

Strutt would love to one day work in a "hospital designed by children," he says. "It will be a place where kids can learn about their illness through interactive exhibits [and] get distracted from their pain and suffering by having themed inpatient rooms, amusement rides, and fun activities." L.S.C.

## SEED MONEY FOR SCIENCE

**S**everal budding scientists at Dartmouth got a boost this spring, thanks to a \$1.5-million four-year grant from the Howard Hughes Medical Institute (HHMI). The grant is funding up to 25 paid research internships for sophomores at Dartmouth College; 8 of the 15 HHMI interns chosen so far are working with members of the DMS faculty.



The grant is allowing science education to bloom at Dartmouth in other ways, too, by funding nine new teacher-training fellowships for postdoctoral scientists and an outreach program for third- to sixth-grade students. This past winter, with the help of the Montshire Museum of Science, Dartmouth undergraduate and graduate students—including three from the Medical School—conducted weekly in-school "science camps" in the nearby Rivendell School District.

"Our students will gain as much as the Rivendell students," predicts Nancy Serrell, associate director for outreach at Dartmouth's Center for Environmental Health Sciences, as well as the coordinator of the HHMI program at Dartmouth. "This is the way outreach is supposed to work. There's a balance of benefit that goes in both directions. . . . Students who apply their science in outreach are more likely to stay in science." J.D.

## Students win grants and honors for free clinic

**F**or the past four years, Dartmouth medical students have been doing the usual—going to class, doing lab work, hitting the books. *And* running a free medical clinic for uninsured residents of New Hampshire towns along the Mascoma River.

Twice a month, in donated space in Canaan, the Mascoma Valley Free Health Clinic provides primary care to those in need. The idea originated as a 2003 Schweitzer Fellowship proposal by Amy Noack '05. Ever since, DMS second-year students and DHMC residents have kept the clinic going. Over 50% of the current second-years helped at the clinic this year, and more than 60% of first-years plan to volunteer next year.

**Time:** Working at the clinic gives students an early chance to apply classroom knowledge. They learn how to relate to patients as they gather medical histories so the resident in charge can make treatment decisions.

"Students do not have the same time constraints as do full-fledged doctors," says fourth-year student Matthew Laquer, "enabling them to have longer interactions with patients."

**Care:** Kristen Yurkerwicz, a second-year, recalls a teenaged patient who came in for a pregnancy test. "The second-year student that evening got to have a very thorough and thoughtful conversation with the girl and her mother," says Yurkerwicz. The student "and the teen really bonded that night, and both left with a very positive clinical experience." The teen was then referred to DHMC for further testing and prenatal care.

The clinic, a satellite of the free Good Neighbor Health Clinic in White River Junction, Vt., also introduces students to the realities of providing care to uninsured patients with chronic conditions. For patients with high blood pressure, high cholesterol, or diabetes, the cost of



JON GILBERT FOX

Medical student Jessica Hayward, volunteering here in the Mascoma Free Clinic, is learning not just how to take a blood pressure, but how to connect with patients.



medications can be daunting. “One pill can be so expensive that it wipes out an entire month’s income,” says fourth-year Theodore Yuo, who has helped raise money for the clinic. Now, a local pharmacy provides medications to the clinic for one dollar above wholesale. And, Yuo adds, students are learning that “there are other ways of treating these illnesses than the most expensive.”

Coordinators hope to expand the clinic’s services and offer counseling on diabetes, tobacco, and healthy lifestyle choices. “A patient’s health-care needs [go] well beyond their visit to a provider’s office,” says second-year James Town. “We’ve helped them identify lifestyle issues they can target, such as diet, exercise, and smoking cessation.” The students have also set up a website containing health tips (see [www.dartmouth.edu/~mascoma](http://www.dartmouth.edu/~mascoma)).

**Money:** The “growth-limiting factor” in the clinic is funding, says Laquer. Yet students find innovative ways to raise money, holding raffles, talent shows, and even a triathlon. The clinic has also been supported by grants—including a \$20,000 “Caring for Community” award from the Association of American Medical Colleges.

The clinic’s latest honor was Dartmouth’s 2007 Martin Luther King, Jr., Social Justice Award, in the student organization category. The “Mascoma Clinic’s success,” says M.D.-M.B.A. student Jessica Morgan, “is indicative that community service is an integral part of life here at DMS.”

DANIELLE THOMAS

## INVESTIGATOR INSIGHT



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

**Lisa Sutherland, Ph.D.**

**Research Assistant Professor of Pediatrics**

*Sutherland, a nutrition scientist, studies environmental influences on childhood obesity. Her research focuses on the impact of media—such as advertising and product placement in movies—on kids’ food and beverage choices. She joined the faculty in 2006.*

**How did you get interested in your area of research?**

I have a complete fascination with pop culture. Having the opportunity to combine that with nutrition and health trends is a win-win for me.

**What misconceptions do people have about your field?**

Most people still think of nutrition professionals as “lunch ladies.” Most of nutrition science training is actually basic science, with an emphasis on chemistry and metabolic pathways.

**What’s your favorite nonwork activity?**

I like to cook and travel. Any combination of the two is just a bonus.

**If you could travel anywhere, where would it be?**

I would like to travel Africa—from Morocco to Madagascar—and while there volunteer with USAID or the Hunger Project.



**What about you would surprise most people?**

I am quite shy and scared to death of large crowds. You won’t catch me at a mall or department store during the holidays.

**Of what professional accomplishment are you most proud?**

My work as one of the lead scientists on a nutrition rating system for Hannaford supermarkets. The work started out with a very specific purpose but has ended up creating national and

international discussion on flimsy nutrition and health-claim labeling standards and the need for a standardized rating system. We did what many said was impossible. I am very proud of our work.

**What is the greatest frustration in your work?**

How fast nutrition science continually changes and the confusion that causes for consumers.

**And the greatest joy?**

How fast nutrition science continually changes and the rapid advances in medicine, pharmaceuticals, and policy because of these changes. Nutrition is still a relatively new science. Vitamin C wasn’t isolated until 1928, and we didn’t have a health and nutrition monitoring system in the U.S. until the late 1960s. It’s bound to cause some conflict and confusion.

**What historical event would you most like to have been present at in person?**

The Last Supper. There’s got to have been good food, wine, and conversation, right?

**What websites do you use most often?**

J. Crew, Ann Taylor, Nordstrom’s, Pottery Barn, Williams-Sonoma . . . You see the trend.

**What do you ultimately want to discover?**

How to end world hunger. There is enough food produced to adequately nourish everyone in this world; the problem is inequitable distribution.

**What do you admire most in other people?**

Patience. I am lacking in this area but working on it constantly.

**What’s the hardest lesson you ever had to learn?**

How to live without my mom after she died when I was 18. I am a much stronger person from the experience, though.

**What is your idea of earthly happiness?**

Wine and dark chocolate.

**Do you have a treasured possession?**

Yes. My children, Parker, 14, and Samantha, 6.

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

**Allen Dietrich**, M.D., a professor of community and family medicine, was named a member of the U.S. Preventive Services Task Force, the nation's leading panel for preventive and primary care. He is also cochair of the John D. and Catherine T. MacArthur Foundation Initiative on Depression and Primary Care, a national program based at Dartmouth.



**Richard Powell**, M.D., a professor of surgery, was recently appointed as a member of the Bio-engineering, Technology and Surgical Sciences Study Section of the National Institutes of Health's Center for Scientific Review.



**Diane Harper**, M.D., a professor of community and family medicine, was the lead author of a paper that was chosen as runner-up for the best medical research paper of 2006 by a panel of *Lancet* editors and an international advisory board. The paper reported results of a cervical cancer vaccine trial.



*continued on page 60*

## MEDIA MENTIONS: DMS

Among the people and programs coming in for prominent media coverage in recent months was DHMC's director of palliative medicine. A *New York Times* feature on hospice care noted that Dartmouth's Dr. **Ira Byock**, "a nationally recognized expert in palliative care, . . . says hospice should be viewed not as giving up all hope but about getting the care one needs. . . . Byock rejects the notion that the only point of hospice is to help people die." Byock was also the subject of a profile in the *Boston Globe's* Sunday magazine section, which said that he believes "the core of palliative care, ultimately, is not law or policy but the ongoing interaction with patients." See page 9 in this issue for more about Byock's impact at DHMC.



A feature in *Smithsonian* on facial reconstruction techniques in World War I quoted a Dartmouth expert who compared injuries from WWI to those seen in Iraq. "We're used to thinking about losing an arm or an eye or an ear," says Dr. **Joseph Rosen**, a plastic surgeon at Dartmouth who works with soldiers injured in Iraq. . . . "When you lose all these things simultaneously—[and] the blast injuries take your arms with your face—that's what makes these polytrauma injuries. They're not the sum of their parts; they're much worse." See page 54 in this issue for more on Rosen's work.

Have you ever wondered if there's anything to the "proliferation of products, mostly hawked over the internet, that promise to help turn the last bit of untrammled downtime (sleep) into an opportunity for self-improvement?" The *New York Times* apparently has and recently explored "sleep-learning." The sleep specialists they consulted were uniformly dubious. "Unlike the hypnotized brain, which is receptive to spoken suggestions, the sleeping brain is not so suggestible," said Dr. **Michael Sateia**, the head of the sleep disorders program at Dartmouth. "Generally," he explained, "sleep is considered to be a state of being relatively 'offline,' as it were, with respect to extrasensory input."



"A protein that signals the onset of the deadliest form of breast cancer has been isolated by a team of New Hampshire scientists," reported *Newsday*. "These patients are at very high risk of recurrence," said **James DiRenzo**, a Dartmouth assistant professor of pharmacology. . . . DiRenzo said more work must be conducted to confirm the discovery" of the biomarker, known as nestin. Agence France Presse also covered the finding, noting that eventually, "if a noninvasive test could be devised to detect nestin, the protein could be used to screen for women at risk for this type of cancer."

Growing concern nationwide about variation in the quality of colonoscopies was the subject of a recent article in the *New York Times*. "Last spring," the article noted, a task force of representatives from two gastroenterology societies "recommended that doctors track their polyp-detection rate. . . . But most have not adopted the recommendation.



Still, Dr. **Douglas Robertson**, a gastroenterologist at Dartmouth and the VA Medical Center in White River Junction, Vt., said it did not hurt to ask for a doctor's detection rate. "If you are met with a total blank stare," Robertson said, "that tells you the doctor is really not clued in to quality issues and is not listening at national meetings."

A Dartmouth study comparing two methods of treating post-traumatic stress disorder (PTSD) in women received widespread media attention. "Women are nearly three times more prone [to PTSD] than men, and the incidence is particularly high among women who have served in the military," reported Reuters. And NPR *Morning Edition* host Joe Shapiro noted that the study involved "a team of 50 therapists who treated nearly 300 women." It compared general psychotherapy with prolonged exposure—which DMS's **Paula Schnurr**, a researcher at the VA National Center for PTSD in White River Junction, Vt., described as focusing "repeatedly and vividly on a traumatic experience, . . . retelling it in a safe context [and] eventually



## A N D D H M C I N T H E N E W S

learning that the feared memory . . . is no longer as frightening.” Host Shapiro explained that “after 10 weeks of exposure therapy, the results were striking—41% had their symptoms go away, compared to only 28% who got the usual therapy.” See page 5 in this issue for more on Schnurr’s study.

There has been much debate about the effect of public “report cards” on medical outcomes—whether, as the *Wall Street Journal* put it, they “boost the quality of health care, . . . don’t have much effect, good or bad, . . . [or have] unwelcome, unintended consequences, such as encouraging doctors and hospitals to game the system by avoiding sicker patients.” The article noted that in northern New England, “heart surgeons have been sharing performance data privately since 1987. Quality has improved . . . without sharing details publicly. The absence of public report cards bred ‘a spirit of collaboration instead of a spirit of paranoia,’ says Dr. **William Nugent**, a heart surgeon at Dartmouth. But seeing the national trend, the consortium plans soon to release results publicly—by hospital, not by surgeon.”

Two Dartmouth experts were asked to weigh in on the subject of flu shots. “The flu season has been relatively mild so far this year,” noted the *New York Times* in December, “making a flu shot seem less urgent. ‘There’s so many people out there that need it and



[that] we know didn’t get it yet,’ said Dr. **Henry Bernstein** [pictured], a pediatrician at Dartmouth and a member of the infectious disease committee of the American Academy of Pediatrics.” By February, the

*Wall Street Journal* was reporting on the formulation of next year’s vaccine, including a change urged by the World Health Organization (WHO). “I’m very much concerned

about the new strains that have appeared so recently,’ said Dr. **John Modlin**, a pediatrics professor at Dartmouth. He said going against the WHO recommendation would create ‘real issues in terms of supply.’” Modlin is past chair of the national Advisory Committee on Immunization Practices.

Dr. **Jonathan Ross** (pictured), a general internist at DHMC, and two residents in medicine—Drs. **Osei Bonsu** and **Jennifer Quinn**—were featured on a recent “Medical Mysteries” segment on ABC-TV’s *Primetime*. The case concerned Diana—a New Hampshire llama farmer and former smoker with food allergies—who noticed a sharp pain in her ear and a loss of hearing. Viewers were asked to guess whether the patient was suffering from “A, nutritional deficiency; B, infection, maybe something from the llamas; C, cancer; or D, circulatory disease.” The show quoted Ross



as having observed that “she had a very, very restricted diet” and so “when I met with the housestaff that morning, I said, ‘I think she has scurvy.’” Quinn stated on the show that her response was

“You’ve got to be kidding,” and Bonsu said, “We all looked at each other in shock.” So, concluded host Jay Schadler, “if you chose option A, nutritional deficiency, you were right. Diana had scurvy, vitamin C deficiency, because of her limited diet.”

A front-page article in the *New York Times*’s “Thursday Styles” section had some advice about “When it’s O.K. to run hurt.” The lead ran like this: “Just before the end of last year, a prominent orthopedic surgeon was stretching to lift a heavy box and twisted his back. The pain was agonizing. He could not sit, and when he lay down he could barely get up. So the surgeon, Dr. **James Weinstein** of Dartmouth, decided to go out for a run.” The article went on to describe why Weinstein and many other doctors now “say most people can continue with the sport they

love,” despite an injury. Though of course he bases his advice on more than his own personal situation, Weinstein told the *Times* that after his post-injury run, “he felt ‘pretty good.’”

A concept called micropractice is gaining favor with doctors, says the *Wall Street Journal*. One technique that helps them do more with patients and less with paperwork is “a



free web survey called ‘How’s Your Health.’ Developed by Dr. **John Wasson** of Dartmouth, the 10-minute survey is a series of carefully formulated multiple-choice questions about the patient’s symptoms, medications, diet, past tests, emotional issues, and habits, such as smoking and drinking.” See more about Wasson’s work on page 62 in this issue and at [www.howsyourhealth.org](http://www.howsyourhealth.org).

“Time to bring back bloodletting?” That was the headline on an MSNBC story about a study by “researchers at the White River Junction, Vt., VA Medical Center and Dartmouth Medical School [that] looked at 1,277 men and women ages 43 to 87 who had peripheral arterial disease. . . . Blood was drawn to promote iron reduction at six-month intervals from some of the patients but not from others.” Among the “younger patients, aged 43 to 61, [there were] fewer deaths from all causes in the iron-reduction group, and also fewer nonfatal heart attacks and strokes.” The results “support the theory that vascular health might



be preserved into later life by maintaining low levels of iron over time,’ said lead author Dr. **Leo Zacharski**.” The finding was also reported in the *Los Angeles Times*, which noted that “excess iron in the blood is thought to promote free-radical damage to arteries.”



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## Worthy of note

*continued from page 18*

**Kiang-Teck Yeo**, Ph.D., a professor of pathology, was named chair-elect of the molecular pathology division of the American Association for Clinical Chemistry. He will serve as chair for the 2008-09 term.

**Karen George**, M.D., an assistant professor of obstetrics and gynecology and the director of DHMC's ob-gyn residency program, was presented with the DHMC Courage to Teach Award, recognizing the outstanding residency director.

**Katherine McFaun Williams**, B.S.N., a clinical resource coordinator in the DHMC Office of Care Management, was honored by the Vermont State Nurses' Association as the 2006 recipient of the organization's Distinguished Service Award. She has served the Vermont State Nurses' Association as a district president, chair of the nominating committee, and state president.

**Frank Musiek**, Ph.D., a visiting professor of surgery and the former director of audiology at DHMC, received the American Academy of Audiology's James Jerger Career Award for

Research in Audiology. It is the nation's major award in the field of audiology.

**Seddon Savage**, M.D., an adjunct associate professor of anesthesiology, was recently appointed president of the New Hampshire Medical Society. She is also the director of the Dartmouth Center on Addiction Recovery and Education.

**Alfred Griggs**, chair of both the Dartmouth-Hitchcock Medical Center Board of Trustees and of the Mary Hitchcock Memorial Hospital Board of Trustees, received the New England Healthcare Assembly's Trustee Leadership Award for 2006. He joined the MHMH Board in 1994 and has chaired it since 2001, and he joined the DHMC Board in 1999 and has chaired it since 2002.



**Roy Wade**, a fourth-year DMS student, was one of only five medical students nationwide named a GE Medical Scholar by the National Medical Fellowship program; open to fourth-year medical students, the fellowship will allow him to participate in a three-month elective in Ghana, West Africa.

**Narath Carlile**, a second-year DMS student, received an American Medical Association Foundation 2007 Leadership Award, recognizing future leaders in organized medicine.

**Jessica Morgan**, **James Town**, and **Kristen Yurkerwich**, all second-year DMS students, accepted the Martin Luther King, Jr., Dartmouth Social Justice Award, in the student organization category, on behalf of the DMS Community Service Committee's Mascoma Clinic project. See page 16 in this issue for more about the Mascoma Clinic.

Eight first- and second-year Dartmouth medical students—**Omri Ayalon**, **Leslie Claracay**, **Nicolas Ellis**, **Umbareen Mahmood**, **Carolyn Presley**, **Rajesh Ramanathan**, **Katherine Ratzan**, and **Pablo Valdes**—have been named DMS's first Urban Health Scholars. The program, which is supported by a grant from the Harvard Pilgrim Health Care Foundation, is for students interested in caring for underserved patients in urban areas. It is modeled on DMS's Rural Health Scholars Program, which is aimed at students interested in primary care in remote areas. The Urban Scholars will work during their clinical rotations and electives in neighborhood clinics, shelters, community centers, and other venues that serve vulnerable populations. **Joseph O'Donnell**, M.D., DMS's senior advising dean, is overseeing the program.

**John Strohhenn**, Ph.D., former provost of Dartmouth College, died on February 22 in Hanover, N.H. He was 70 years old. A member of the faculty at Dartmouth's Thayer School of Engineering from 1963 to 1993, he also held an adjunct appointment at the Medical School and collaborated on biomedical engineering research with several DMS faculty. He was provost at Dartmouth from 1987 to 1993, and it is a mark of his impact on the institution that the Medical School named its top award for a graduating Ph.D. student in his honor. After leaving Dartmouth, Strohhenn was provost of Duke University from 1994 to 1999; he retired from Duke in 2003.

Dartmouth's **Norris Cotton Cancer Center** and the American Cancer Society (ACS) recently announced an agreement to share information and resources and to collaborate on research, advocacy, and cancer awareness activities. One of only 39 National Cancer Institute-designated comprehensive cancer centers in the U.S., Norris Cotton is the first one in New England to enter into this kind of partnership with the ACS. ■