



**SNOW JOB:** Dr. Edward Merrens, chief of hospital medicine at DHMC, was the U.S. biathlon team physician at the Vancouver Olympics. Biathlon combines Nordic skiing and target shooting. Merrens was a Nordic skier as an undergraduate at Dartmouth.

## PITCH-PERFECT PARTICIPANT

When Chris Carpenter first heard about the Children’s Hospital at Dartmouth (CHaD), few outside southern New Hampshire could have picked the young major-leaguer out of a lineup. Not even fellow Manchester resident John Xiggoros could have done so—until his physical therapist pointed out the 6-6 pitcher working out at the same rehab center.

It was the late 1990s and Xiggoros and his wife, Patricia, were launching a fund to benefit CHaD in memory of their daughter, who’d died of a rare cancer (see [www.kristensgift.com/about.htm](http://www.kristensgift.com/about.htm)). Hoping to enlist Carpenter’s help, Xiggoros asked permission to contact his agent. “Chris asked me who it benefited,” Xiggoros recalls. “After a brief explanation, Chris said, ‘I’ll be glad to help the kids. We don’t need any agents. Just tell me where to be and what to do.’”



Since then, Carpenter has won a Cy Young Award and a World Series ring. And made significant donations to CHaD—most recently \$20,000 after the National League named the St. Louis Cardinal the Comeback Player of 2009. And he and his wife, Alyson, have visited young patients at CHaD several times. “I was there the day after one of his visits, and the staff was just amazed at how thoughtful and generous he was with his time,” says Sharon Brown, CHaD’s director of community relations. “He got right down on the floor with the kids.” D.C.

## TOPS IN THE FIELD OF STRESS

Much as they welcomed recent recognition from the International Society of Traumatic Stress Studies (ISTSS), DMS’s Matthew Friedman, M.D., and Paula Schnurr, Ph.D., knew better than to rest on their laurels. In fact, the day before they both received national awards at the ISTSS conference in Atlanta, an Army psychiatrist opened fire at Fort Hood, Texas, killing 13 people. All manner of media descended on the meeting, clamoring for instant analysis.



Friedman, who received the group’s Public Advocacy Award, was ready, calling the event “much more difficult to absorb, to understand” than battlefield deaths.

Schnurr, who received the group’s Robert S. Laufer Award for outstanding scientific achievement, calls her colleague “one of the most significant positive influences on the entire field.” She and Friedman have a long track record of serving the field together, as cofounders and leaders of the 20-year-old National Center for Post Traumatic Stress Disorder, based at the DMS-affiliated White River Junction, Vt., VA Medical Center. D.C.

## Blood draw waiting times drop dramatically

In DHMC’s outpatient phlebotomy labs, the journey to improved patient care began with 122 steps.

Every day, hundreds of patients have their blood drawn at one of the Medical Center’s four outpatient phlebotomy labs. By last spring, says Michael Harhen, the administrative director of pathology, it was clear from surveys that many of those patients were not entirely satisfied with the process. The biggest problem was the wait

time—an average of 22 minutes. But over the past year, the managers and employees who staff the labs have implemented a series of changes that have made a dramatic difference, cutting the average wait to about three to five minutes.

**Flow:** Before making any changes, lab managers brought in consultants to provide a new perspective. The consultants videotaped the blood-drawing process, from the time a patient checks in to the moment the blood sample is sent away for analysis. They then charted the flow of patients, paperwork, and samples through the lab, breaking down each part of the process and even counting the number of footsteps taken by lab staff. Among other conclusions, they found that 122 of those footsteps were wasted effort that did not contribute to patient care.

The study helped staff focus on what was essential to get a patient through the lab quickly and

safely. “When someone comes in to have their blood drawn, they’re not really concerned about anything other than getting a safe needle stick . . . quickly and accurately,” says Jonathan Park, Ph.D., the manager of the clinical laboratories. “Everything else is extraneous.”

**Tasks:** Starting in April 2009, the lab implemented a number of changes to make the process more efficient, including re-arranging where employees sit and changing the tasks done by some employees.

Another important change came with the implementation of software that allows a lab employee to monitor wait times at the four different outpatient phlebotomy labs. Each step in the process is time-stamped and automatically entered into the monitoring system, making it possible to know how long patients are waiting, on average, at each lab. That way, if the lab on Level 3 is moving smoothly but patients are backing up on Level 5, personnel can be shifted to address the problem before wait times get too long. “They’re really small changes, but there was a huge impact,” says James Tracy, manager of support services and education.

**Wait:** Each morning, the average wait times from the previous day are posted where employees can see them. Longer wait times are highlighted in red or yellow, while shorter wait times are highlighted in green. Before the

**The results of blood tests now get to physicians 40% more quickly.**

**PAPER WEIGHT:** Dr. David Goodman, a national expert in researching the physician workforce, coauthored an op-ed essay titled “Doctors No One Needs” for the December 23, 2009, issue of the *New York Times*.



changes were implemented, wait times under 12 minutes were green. Now, Tracy says, anything over 10 minutes is red.

**Save:** Rethinking the process has also helped the phlebotomy labs save money. For one thing, they were able to cut down on the amount of supplies they need to keep on hand. They are also working on using more straight needles and fewer butterfly needles. Straight needles work just as well for most patients and cost significantly less than butterfly needles, which are still used for patients whose veins are more difficult to access. That change alone could lead to annual savings of about \$150,000.

“We’re not where we want to be yet, but we’re getting there,” says phlebotomy supervisor Michelle Gour. “We’ve already saved a lot of money.”

The phlebotomy staff has also taken steps to improve the process of taking inpatient blood

samples, allowing them to improve the percentage of samples that are analyzed by 8:00 a.m. Gour says that getting those samples collected and analyzed as early as possible allows physicians and patients to make decisions about treatments earlier in the day, making it easier to discharge patients or schedule procedures.

As a result of the changes, the results of blood tests now get from the lab to the physicians who ordered them 40% more quickly. Gour says that both patients and physicians have commented on the changes. The improvement is also evident on patient survey forms, with satisfaction rates on the rise since the changes were implemented.

**Mission:** “Not only did we speed up our process, but we improved the patient experience, which is what our mission is all about,” says Harhen.

AMOS ESTY



JON GILBERT FOX

**A quality improvement project in Dartmouth-Hitchcock’s outpatient phlebotomy lab cut the average waiting time for patients from 22 minutes to five minutes or less.**

F A C T S & F I G U R E S

**Emergency exit**

**1979**

Year emergency medicine became a recognized specialty

**1982**

Year DHMC hired its first certified emergency physician

**1995**

Year DHMC became a Level I Trauma Center



**2**

Number of physicians (both residents) who saw patients in DHMC’s Emergency Department (ED) before 1982

**14**

Number of certified emergency physicians on the staff now

**25,700**

Number of certified emergency physicians in the U.S. now

**12,000**

Number of patients per year seen in DHMC’s ED in 1982

**32,000**

Number per year seen now

**2010**

Year DHMC’s first certified emergency physician, Dr. Norman Yanofsky, is retiring as section chief

SOURCES: AMERICAN BOARD OF EMERGENCY MEDICINE, DHMC

**SOBERING NEWS:** Danielle Gulick, Ph.D., completed a study just before arriving at DMS as a postdoctoral fellow, showing in mice that—contrary to conventional wisdom—caffeine does not mitigate the cognitive deficits caused by alcohol consumption.



## THEN & NOW

A reminder of the pace of change, and of timeless truths, from a 1961 publication titled *Medical Education and Dartmouth*:

“In June of 1959, construction was started on . . . a seven-story Medical Science Building. . . . Designed by Shepley, Bulfinch, Richardson and Abbott, the structure provides a separate floor for each of the School’s departments . . . anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology.”



**1974**

Year the Medical Science Building was renamed the Remsen Building

**1991**

Year Dartmouth-Hitchcock Medical Center moved into a new facility in Lebanon, N.H., designed by Shepley, Bulfinch, Richardson and Abbott

## New surgery chair is a transplant from Tufts

Midway through medical school in the early 1980s, Richard Freeman, Jr., reached a fork in his career path that the narrator of Robert Frost’s “The Road Not Taken” would have appreciated. “By third year, you have to decide,” Freeman recalls. “Medicine or surgery.”

Or so he thought, before finding a way to do both. “With transplantation, there’s a lot of surgery and a lot of medicine,” Freeman says. “That really appealed to me.”

**Choice:** That choice led the now-renowned transplant surgeon down a road that brought him, almost three decades later, to Dartmouth, where he became chair of the Department of Surgery on January 4. He succeeded Richard Dow, M.D., chair of surgery from 1996 to 2008, and Lawrence Dacey, M.D., who served as interim chair through the end of 2009.

After Freeman decided to go into transplantation, he spent seven years training at Harvard’s New England Deaconess Hospital in Boston, including a year as chief resident. “I liked the collaborative, team approach” that transplants require, Freeman says. “It’s a team sport, for sure. And so much is involved: molecular biology, ethics, international politics, states’ rights versus federalism. . . . As a [medical] student, I didn’t appreciate all that stuff. The field has advanced dramatically. The field was in its infancy. Now it’s a really mature field.”

Freeman watched, and aided,

the field’s maturation during nearly two decades on the faculty at Tufts. From 1990 to 2009, he was a staff surgeon there—contributing to a redesign of the curriculum, leading surgical education, and, most recently, serving as vice chair of the surgery department and directing the Surgical Research Laboratories. He also directed the transplant fellowship program at Tufts Medical Center and conducted research in areas ranging from genetic differences in the immune response to policies on allocating donor organs.

**CVs:** At Dartmouth, Freeman will oversee a department that offers training and treatment in 11 surgical specialties. “I reviewed everyone’s CVs,” he says. “I was very impressed by the fact that there are some extremely accomplished people—a lot of

them, across the board,” Freeman recalls. “One of my tasks is to stimulate them to grow their careers, become experts.”

**Alert:** And, he adds, to alert the world to that expertise. “My goal is going to be to raise the academic level a bit, promote mid-level and junior people,” Freeman says. “Everybody knows about Dartmouth’s undergrad school, and the medical school in New England has a very good reputation. I want to help make the Hospital and the Medical School really be noticed nationally and internationally.”

Dartmouth caught his eye for a variety of reasons. “There’s a lot of attractions,” Freeman says. “There’s a potential to have a really integrated health system. The Clinic, the Hospital, the Medical Center are [well] put together and aligned.” He also looks forward to using allied hospitals in southern New Hampshire as “educational venues. It will be important for all the [department] chairs to integrate with these other teaching sites.”

He expects the imminent completion of a 41,000-square-foot outpatient surgery center to help improve efficiency, convenience, and safety for patients—all important goals in an era of change in health-care.

**Efficient:** “The growth area here,” Freeman says, “is going to be figuring out how to be more efficient. The development of the outpatient center is one step of many that need to happen to be more efficient.”

DAVID CORRIVEAU



JON GILBERT FOX

Freeman was surgery vice chair at Tufts.



**IN THE PINK:** “Pink at the Rink” was a theme of the February 5 Dartmouth women’s hockey game against Yale. The players wore pink laces in their skates, and fans who wore pink got into the game for only \$1. The goal was to promote cancer awareness.

THEN & NOW

**A reminder of the pace of change, and of timeless truths, from a mid-1970s booklet about plans to expand Dartmouth Medical School:**

“Dartmouth is expanding its total [M.D.] enrollment while encouraging minority groups and women to enter the medical profession. By 1976, enrollment will have almost doubled, from 104 in 1969 to 192... Competition for admittance to the program continues to be fierce.”



**1987**

Year DMS first admitted more women than men

**319**

Number of M.D. students enrolled in 2008-09

**5,300**

Applicants for 84 first-year M.D. places in 2009

**27%**

First-years who are of color or international in 2009-10

**From New Hampshire’s hills to Mexico’s mountains**

“I was working in the woodshop, freezing my fingers and working on this little ambulance,” says DHMC’s John Markowitz, “and I started thinking, would it ever be possible to provide an ambulance for the community in Tlachichuca?”

Tlachichuca (pronounced lachi-CHOO-ka) is a small town in a mountainous area of southern Mexico. Markowitz, an operations assistant in DHMC’s Emergency Department, first visited the area to climb a volcano and do relief work after heavy flooding in 1999. He kept going back to deliver clothes and shoes. Then he met Dr. Gerardo Reyes, whose family runs a climbing service. Reyes had recently been named Red Cross director for the area, but with the title came no medical supplies, no staff, and no ambulance. (In rural areas of Mexico, Red Cross ambulances play a huge role, assisting in all medical emergencies.) Markowitz decided he had to do more to help the region.

**Plan:** As he built the toy ambulance as a gift for Reyes, he formed a plan to send Tlachichuca a real one; he named it the MEX-AMBUlance Project. First, he organized a climbing trip to Mexico and recruited 16 people who collectively donated enough to buy a used military-style truck that could be converted into an ambulance: a 1960 Mercedes Unimog that Markowitz found in Phoenix, Ariz.

Next he had to retrofit it and

transport it to Mexico. Markowitz found a Unimog technician, Thilo Cass, located in Prescott, Ariz. After the Unimog arrived in Cass’s shop, it acquired new tires and brakes and a new canvas cover. A stretcher was donated by the Enfield, N.H., FAST Squad. Support parts for the stretcher were donated and installed at no charge by a national EMS supply company. Finally, after an 18-month delay waiting for it to clear customs, the ambulance arrived in Tlachichuca in 2005.

**Trips:** The MEX-AMBUlance team continued to make trips to Mexico to deliver ambulance parts and clothing, and do more climbing. On a trip in 2009, Reyes told the team that a delegate for the State of Puebla Red Cross would soon be visiting his clinic to certify it. He had all his medical supplies laid out in a big warehouse. Could the DHMC group, Reyes asked, do an inventory for him? They had just two hours to do it. Markowitz; Amy Eilertsen, a care manager for the DHMC

Live Well/Work Well employee health program; and her two sons went to work. They organized and catalogued boxes and boxes of bandages, casts, splints, and other supplies that MEX-AMBUlance had donated—“enough to outfit everybody in the town of Tlachichuca,” says Markowitz.

**Thanks:** They finished just in time. The delegate arrived and after the review presented Markowitz with a letter of thanks and Reyes with certification as the 23rd Red Cross Site and Ambulance Center in the Mexican State of Puebla.

As an official site, Reyes can now share supplies with other Red Cross stations, receive both training and monetary donations through the Red Cross, and monitor Red Cross radio frequencies in the ambulance. DHMC is donating two more stretchers and some hospital bed



**Posing with the Unimog are Markowitz (left), Reyes (right), and Amelia de la Madrid Paredes (rear), the Red Cross delegate for the State of Puebla, where Tlachichuca is located.**

**AIRTIME:** In 15 years of service, DHART (the Dartmouth-Hitchcock Advanced Response Team) has done 10,631 helicopter transports and 4,835 ground transports. About 80% are hospital-to-hospital, and the rest are “scene calls.”



## Stimulus dollars prompt rise in research income

**W**ith the help of stimulus dollars from the American Recovery and Reinvestment Act (ARRA), DMS garnered 4% more grant and contract income in the 2009 than the 2008 fiscal year. DMS researchers brought in \$115.6 million in FY09, up from FY08’s \$111.2 million.

The National Institutes of Health (NIH) provides the majority of DMS

research income. But annual NIH bud-

get increases have “ranged from appalling to merely dismal over the past few years,” says Jennifer Friend, the director of research support services at DMS. So when extra research money was offered as part of the federal stimulus package, “the response not just here but overall was huge,” she explains.

**Fund:** The NIH announced it would use stimulus money to fund about 200 special “Chal-

lenge Grants” in particular research areas, and approximately 20,000 applications were submitted nationwide. The funding requested by DMS investigators shot up 49%.

**Total:** The amount of stimulus money DMS actually received in FY09—\$2.9 million—is small relative to the Medical School’s overall research portfolio. But Friend thinks it was the main reason that grant and contract income rose, since NIH funding has stagnated in recent years. Falling NIH funding drove FY08’s 11% drop in research income from FY07’s total.

In FY09, some departments secured significantly more funding than in the previous fiscal year. The Department of Physiology received \$10.2 million, an increase of 74%. And the Departments of Medicine, Microbiology and Immunology, Psychiatry, and Surgery each added more than \$1 million to their research totals.

**Sources:** The NIH and other agencies in the Department of Health and Human Services provided about 66% of DMS’s research funding. State and local governments accounted for about 11%. Other sources included foundations (7%) and corporations (5%).

Some of the ARRA money was used to fund proposals submitted before Congress passed the stimulus package in February 2009. In January, physiologist Allan Gullledge, Ph.D., had

asked for a specialized microscope that enables researchers to peer deep into live tissue. ARRA money later paid for the microscopy facility, which will be shared by DMS, Dartmouth College, and Dartmouth’s Thayer School of Engineering.

Many ARRA awards will be reflected in FY10’s research portfolio. (DMS has received over \$32 million in ARRA funds all told.) For example, physiologist Bruce Stanton, Ph.D., is the principal investigator on three such grants totaling \$2.5 million. Most of the money was designated for hiring additional people to expand two initiatives—Dartmouth’s Toxic Metals Research Program and collaborative Center of Biomedical Research Excellence in lung biology.

**Jobs:** While the stimulus dollars are helping to preserve research jobs—while keeping important work under way—Stanton is worried that securing funding may be “even harder after the ARRA money dries up.”

Friend observes that the call to increase federal support for research has recently shifted focus. Science advocacy groups are starting to frame federal research funding as an economic issue, she says. “Federal funds create good, paying jobs . . . in pretty much every congressional district in the country,” she notes.

It would be nice if the government pumped more money into research “because it’s the right thing to do,” she adds. But it doesn’t hurt to also have members of Congress support research to create jobs for voters.

KATHERINE VONDERHAAR

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

**Jim Yong Kim, M.D., Ph.D.,** president of Dartmouth College, was named to the federal govern-



ment’s Presidential Advisory Council on HIV/AIDS. Kim cofounded the internationally recognized nonprof-

it organization Partners in Health, which has brought treatment for AIDS and other diseases to impoverished communities worldwide. He is also former director of the World Health Organization’s Department of HIV/AIDS. In that role, he led the 3 by 5 Initiative, which sought to treat 3 million new HIV/AIDS patients in developing countries with antiretroviral drugs by 2005; launched in September 2003, the ambitious program reached its goal in 2007. The Presidential Advisory Council on HIV/AIDS provides advice and recommendations on domestic and global HIV/AIDS policy issues.

The American Association for the Advancement of Science



recently elevated two members of the Dartmouth faculty to the rank of fellow.

**Jay Dunlap, Ph.D.,** a professor and

chair of the Department of *continued on page 54*



JON OLBERT FOR

**Physiologist Bruce Stanton heads three large projects that got stimulus grants.**