

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

A sense of satisfaction

Selected industries' public satisfaction ratings  
(Respondents to a 2002 Harris poll who think that the following industries are "doing a good job of serving their consumers")

Banks

74%



Hospitals

73%



Computer manufacturers

59%



Phone companies

58%



Life insurance companies

55%



HMOs

33%



Tobacco companies

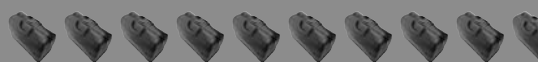
25%



DHMC outpatient satisfaction rating

(Surveyed patients who rated their visit as good to excellent)

96%



DHMC inpatient satisfaction rating

(Surveyed patients' overall rating of their stay, as a percentile compared to 154 members of the Council of Teaching Hospitals)

98th



Research may be exaggerated on its way to press

Although most people don't care to read medical journals or attend scientific meetings, they are eager for the latest medical news. So they watch television, listen to the radio, and read newspapers and magazines to stay informed about health.

Usually it's the media that gets blamed when news about medical advances is exaggerated. But two Dartmouth researchers recently made a startling claim: the scientific community may be partly to blame for hyping medical news.

In two studies published in the *Journal of the American Medical Association (JAMA)*, Lisa Schwartz, M.D., and Steven Woloshin, M.D., revealed flaws in the way medical research is reported. In one article, the wife-and-husband team pointed out how press releases from medical journals may exaggerate study results and fail to illuminate their limitations. In the other, they described how preliminary research presentations at scientific meetings may receive unwarranted media coverage.

**General press:** "Since so much of what people know and believe comes from the general press, we thought it would be important to look at how medical research is covered," says Woloshin. He and Schwartz, who are part of the Outcomes Group at the VA Medical Center in White River Junction, Vt., have made a specialty out of exploring how med-

ical information is communicated to the public.

Although medical journals strive to ensure accuracy in the papers they publish, their press releases do not always reflect those efforts, say Schwartz and Woloshin. Some press releases may exaggerate the perceived importance of findings, may not highlight study limitations or industry funding, or may not present numbers very well.

The researchers conducted 15-minute telephone interviews with press officers at nine prominent medical journals and analyzed 127 press releases about research articles. Seven of the nine journals routinely issue press releases: *Annals of Internal Medicine*, *British Medical Journal*, *Circulation*, *JAMA*, *Journal of the National Cancer Institute*, *Lancet*, and *Pediatrics*. *Annals of Surgery* and *New England Journal of Medicine* do not.

**Haphazard:** "What we found was a haphazard process" in the way the journals issue releases, says Woloshin. "Some have very little editorial input" other than to select the articles that will get press releases. "At the other end of the spectrum is the *Journal of the National Cancer Institute*," where the study author, the editor who worked with the author, the journal's editor-in-chief, and the press office work together "to really make sure that the thing is done right."

In addition, says Schwartz, "some people are writing very short tips for the media and then there's the longer one- or two-page press release."

She and Woloshin believe



**Steve Woloshin and Lisa Schwartz read health news in the paper with an even more discriminating eye than do most doctors. They recently published two studies in the *Journal of the American Medical Association* putting some of the blame for exaggerated coverage of breaking medical news onto the scientific community.**

that the quality of press releases could be improved if the journals strengthened the editorial oversight of the process and developed a standard format, analogous to the structured abstracts that summarize a study.

**Meetings:** In their other study, Schwartz and Woloshin elucidated how press coverage of scientific meetings may be “too much, too soon.”

“We’ve noticed in the newspapers that medical meetings get a lot of coverage,” says Woloshin. “The stuff that gets picked up by the media is most likely to affect the public perception.” Often those studies are preliminary and may not live up to their early promise. But the public rarely hears if the research doesn’t pan out as hoped.

The authors looked at media coverage of five high-profile medical meetings in 1998 and found 252 news stories reporting on 147 research presentations—an average of 50 news stories per

meeting. Only 50% of the presentations were later published in high-impact journals; 25% were never published and 25% were published in low-impact journals.

Interestingly, “if your abstract got a press release, you were more likely to get page one [media coverage, but] slightly less likely to be published in a high-impact journal,” says Woloshin.

Schwartz and Woloshin are quick to point out limitations in their own work. In the press release study, for example, they examined only a few journals and a limited number of releases and did not assess the relationship between the releases and subsequent media coverage. For the scientific meeting study, they did not examine the extent to which the public pays attention to or is influenced by such stories.

They are planning follow-up research, including a content analysis of the news stories.

Laura Stephenson Carter

## DMS geneticists shed light on photoreception

A team of DMS geneticists has found a molecular shortcut from light-reception to gene-activation in their ongoing research into biological clocks. Their work has revealed that a protein called White Collar-1 (WC-1) does double duty: it perceives light and then, in response to light, it turns on a key gene called *frequency*, a central component of the cellular clock that paces life’s daily ebb and flow.

Biological clocks are set by the daily cycles of light and dark. Using the fungus *Neurospora*—common bread mold—the Dartmouth team is studying how organisms keep track of time using this internal clock.

“What we have discovered is that a protein called White Collar-1 is both the photoreceptor and the mechanism that turns on the *frequency* gene, all in one molecule,” says Allan Froehlich, a graduate student who was the lead author of the article reporting the new work. “It’s the combination of the two activities that is so interesting.”

**Genetic underpinnings:** The finding, which was published in the journal *Science*, was also the work of Jay Dunlap, Ph.D., a professor and the chair of genetics; Jennifer Loros, Ph.D., a professor of biochemistry; and postdoctoral fellow Yi Liu, Ph.D., now on the faculty at the University of Texas Southwestern Medical Center. Dunlap and Loros have made numerous contributions to

understanding biological clocks’ genetic underpinnings.

Researchers working with a variety of organisms had already begun to understand how photoreceptor proteins perceive light at the molecular level and then pass on this information through a series of other proteins. This new finding about WC-1 reveals a relatively simple step that takes place between a protein perceiving light and activating a gene.

“Virtually nothing is known about how pathogenic fungi respond to light or whether our discovery can be exploited for a noninvasive medical therapy,” Dunlap says. “But, if you want to do therapy—antifungal, antibacterial, or anything—you start

**DMS graduate student Allan Froehlich, below, was the lead author on a study that identified a significant new mechanism in the cellular biological clock.**



looking for biochemical activities that the host does not have that can be targeted to the pathogen.”

Froehlich, working with Dunlap and Loros, built on their discovery that the gene *frequency* encodes a central cog of the biological clock cycle and that light resets the clock through *frequency*. He then determined that WC-1 and WC-2 bind to the specific parts of *frequency* that turn it on in response to light. Finally, he showed that under appropriate biochemical conditions, WC-1 is the photoreceptor protein.

**Lots more to discover:** “The next step is to continue to understand how the proteins work,” Froehlich explains. “There are many more unidentified proteins that may be influencing biological clocks, which provides us with lots more to discover.”

SUE KNAPP

## Emeriti in 2002 represent a DMS “brain drain”

The psychiatrist, neurologist, and psychologist granted emeritus status this year have at least two things in common: their careers were focused on the brain, and they plan to keep their own brains busy in retirement.

**John Nemiah, M.D.**, was starting his third—make that fourth—career when he joined the DMS faculty as a professor of psychiatry in 1985. The first was as a psychiatrist at Massachusetts General Hospital from 1948 to 1968. The second was at Harvard’s Beth Israel Hospital from 1968 to 1985. And what could be considered his third career, although it overlapped with his time at Harvard and Dartmouth, was serving for 15 years as editor of the distinguished *American Journal of Psychiatry*.

The son of Royal Nemiah, a longtime professor of classics at Dartmouth College, John Nemiah grew up in Hanover and so welcomed the opportunity to “retire” here. Ever since his return he has been an unpaid, active-duty, part-time professor at DMS. His major task was to supervise residents.

When Nemiah got his M.D. from Harvard Medical School in 1943, he was entering psychiatry just as psychoanalysis was gaining in popularity. He became well known for practicing psychodynamic therapy, in which patients bring their true feelings to the surface so they can experience and understand them.



EVYING SQUIRREL GRAPHICS

All of this year’s new emeriti had careers involving the brain. From the left are psychiatrist John Nemiah, neurologist Alex Reeves, and psychologist Bert Nadeau.

The emphasis in psychiatry has shifted during Nemiah’s career(s) from psychotherapy to pharmacological treatments, and from institutionalizing mentally ill patients to integrating them into community settings.

Now that he’s *really* retiring, he plans to read up on the history of psychiatry, with the aid of a machine that “outwits the central blindness” he suffers from by magnifying text. He’s also looking forward to spending more time with his wife, Margarete, and enjoying visits with their children and grandchildren.

**Alexander Reeves, M.D.**, a professor of medicine (neurology) and of anatomy, may have officially retired after serving for 30 years as neurology section chief, but he certainly doesn’t intend to slow down. He will be moving to a house—built in 1842 by a ship’s captain—that he and his wife bought on Chesapeake Bay so they can be near her new job at the Virginia Museum of Fine Arts in Richmond. But he’ll re-

turn to New Hampshire often to teach at DMS and stay active in Granite State medical societies, though he is also considering applying for a license to practice medicine in Virginia.

Reeves got his M.D. from Cornell in 1963 and did an internship in medicine at Duke and a residency in neurology at Cornell’s New York Hospital. Being hired as chief of DHMC’s Section of Neurology in 1971 made Reeves New Hampshire’s third neurologist. By the time he retired, the section had grown from two neurologists to 16 and the state’s roster to 62.

In retirement, Reeves also plans to bike, paint, cook, fly-fish, and travel. His travels will take him to California to celebrate the 50th anniversary of a company his father cofounded—Cinerama, a 1950s forerunner of big-screen IMAX movies—and to see his daughter, actress Perry Reeves, as well as to Alaska to see his other daughter, Wendy, and her family. He also expects



MARK AUSTIN WASHBURN

to be seeing more of his sons: Lex, an art dealer in Richmond, and Nathaniel, who is moving to Virginia Beach.

**J. Bertrand Nadeau, Ph.D.**, an associate professor of psychiatry, has been active in community mental health for 25 years. He got his Ph.D. in psychology from the University of Minnesota in 1967, came to DMS in 1969, and immersed himself in the community right away.

There were few school psychologists in the region then, so he helped area schools at no charge. Later, he was instrumental in bringing one of the first school psychologists to the region, after people “began to recognize the association between behavior problems and learning disabilities,” he says.

He played a key role in establishing a local community-based mental-health organization—West Central Community Mental Health Services—and was director of children’s services there as well as director of clinical services for Grafton County.

In the 1980s, he reduced his administrative load so he could return to clinical work with children and their families. For the last few years, he has worked exclusively with adults and couples and will continue to do so in the private practice he recently started. He also intends to stay busy training residents, playing golf and bridge, working on projects at home, traveling with his wife to Mexico and Europe, and visiting children and grandchildren in the Upper Valley, Boston, New York, and Chicago.

Laura Stephenson Carter

## Ensemble thread runs throughout Class Day events

The bright, baroque rhythms of a brass quintet set a joyous tone for DMS’s Class Day on June 8. And the ensemble effect of musicians working together was echoed in the opening words by Dean John Baldwin, M.D., to the assembled graduates and their families: “We all help and affect each other,” he said, “and we need to think about our patient relationships in a broader arena.”

**Keynote:** The keynote speaker, Vermont Governor Howard Dean, M.D., also urged the graduates to think of their upcoming careers in a broad context, noting that their years at DMS had been “terrific preparation for a career in politics.” In medicine, he said, people learn how to make decisions quickly based on the evidence presented, whereas too often in politics, “people never make decisions unless they absolutely have to.”

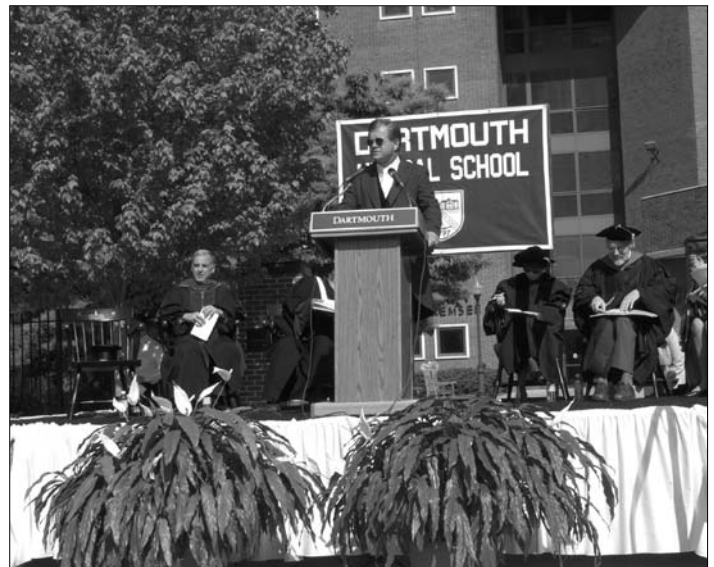
Dean then told the class not to let residency dominate the next few years of their lives but to give some time back to their communities. “If you don’t want to run for Congress . . . at least be on the local school board or planning commission,” he said. Most importantly, Dean told the students, “take the time you need for your family and your loved ones. . . . Invest in them thoroughly throughout your career, or your career will not be successful by every measure.”

The governor also mentioned his keen interest in children’s

ALL: FLYING SQUIRREL GRAPHICS



1



2

**1** Heather Scull (left) and Joanna Hedstrom, master’s candidates in the evaluative clinical sciences, were all smiles as two of this year’s 101 DMS degree-recipients at **2** outdoor Class Day festivities on the DMS lawn. Other celebrants included M.D. grads **3** Stephen Judge (left) and Tom Sprinkle, **4** Uchechi Wosu, and **5** Lindsay Pearce, as well as **6** CECS grad (and fourth-year medical student) Paul Sanchez, pictured here with his wife, Angela, also a fourth-year M.D. student, and their daughter, Sophia. The day’s speakers included **7** Vermont Governor Howard Dean, one of the nation’s two physician-governors; **8** Ph.D. grad Eric Manning; and **9** M.D. grad Christian Meko. Other Class Day highlights included the presentation of awards, including of **10** the Good Physician Award to Rob Fortuna; the traditional hooding ceremony, including of **11** M.D. grad Tanya Chin; and family photo ops for **12** CECS grad Veena Fenn and **13** M.D. grad (and Dean’s Medal winner) Aubrey Ingraham.



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12



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13

health care. In Vermont, he said, “everybody under 18 has universal health insurance. Now if we can do that in a small state, which ranks 26th in the country in income, surely the most powerful, richest nation on earth can do that for our children.”

Dean concluded by saying that doctors have a lot to offer to the political process. “You must not just save your patients, but you can and have an obligation to contribute in some way to saving your community and saving your country.”

Christian Meko was chosen by his classmates as the medical student speaker. He had served as a captain in the Army medical corps before coming to DMS and described his experiences caring for veterans at the White River Junction, Vt., VA Medical Center. “They are unassuming men and women whose heroic actions secured our freedom and gave us a way of life we too often take for granted,” he said.

The graduate student speaker, Eric Manning, who earned his doctorate in microbiology and immunology, spoke about the relationship between research and medicine. “Academic and biological research continues to be ... the foundation for medical research,” he said. “As a biochemist, I juggled pipettes full of noxious chemicals so that some day a medical doctor might have a new product to make a sick patient healthy.”

**Hoods:** The ceremony also included the conferring of hoods on the graduates—46 M.D.’s; one M.S. and 10 Ph.D.’s in the biomedical sciences; and 42

## Student Prizes & Awards

### Dean’s Medal

Aubrey Ingraham

### Good Physician Award

Robert Fortuna

### John W. Strohbehn Medal for Excellence in Biomedical Research

William Belden

### American Academy of Neurology Prize for Excellence in Neurology

Stephen Judge

### Department of Anesthesiology Outstanding Graduating Student Award

Cynthia Yang

### Saul Blatman Award for Excellence in Maternal and Child Health

Jennifer Noon

### Harte C. Crow Award in Radiology

Peter Frech

### Dartmouth-Mosenthal Surgical Society

Jason Fanuele, Sarah Greer, Elizabeth Jewell,

Victor Ochoa, Stephanie Strauss

### French Distinguished Student Award in Pathology

Aubrey Ingraham

### Janet M. Glasgow Achievement Citations

Negean Mahmoudi, Jennifer Noon

### Healthcare Foundation of New Jersey Humanism in Medicine Award

Jodie Dionne

### Julian and Melba Jarrett Memorial Prize

Timothy Burdick

### Frederic P. Lord Award in Anatomy

Morris Rivera

### Department of Medicine Award

Aubrey Ingraham

### Merck Manual Awards

Tanya Chin, Alex Reyentovich

### Arthur Naitove Surgical Scholar Award

Victor Ochoa

### New England Pediatric Society Award

Jennifer Noon

### Department of Psychiatry Award for Excellence in Clinical Psychiatry

Ilona Csapo

### John F. Radebaugh Community Service Awards

Timothy Burdick, Amy Martel

### Rural Health Scholar Awards

Timothy Burdick, Amy Martel

### Hilda Weyl Sokol Award

Jodie Dionne

### Rolf C. Syvertsen Fellow and Scholars

Karen Bradley (Fellow); Jason Fanuele, Aubrey Ingraham, Oneil

Lee, Jennifer Noon, Alex Reyentovich, Morris Rivera (Scholars)

### John and Sophia Zaslow Prize

Karen Bradley

### Douglas P. Zipes, M.D., Research Prize in Medicine

Matthew Brady

M.S.’s and two Ph.D.’s in the evaluative clinical sciences—and the presentation of the top three student awards. All of the student prizes presented during graduation week are listed in the adjacent box.

The students also gave out three awards of their own—the Basic Science Teaching Award to anatomy professors Michael Binder, M.D., and John Lyons, M.D.; the Clinical Science Teaching Award to cardiologist James Bell, M.D.; and the Thomas Almy Housestaff Teaching Award to neurosurgery resident Kendall Lee, M.D., Ph.D. (In addition, the College’s honorary-degree recipients this year included Marilyn Gaston, M.D., the first African-American woman to direct a public health service bureau.)

**Chant:** As Class Day came to a close, John Rassias, renowned professor of languages at Dartmouth, introduced the Hippocratic Oath by singing in Greek a chant that celebrates life and creation. The chant reinforced “the solemnity of the moment,” Rassias said, just as it may have in the time of Hippocrates. Baldwin then led the new M.D.’s and all the physicians in the audience in reciting the ancient oath—which sets forth the ethical foundation of medicine—in an English translation.

The ceremony concluded as the graduates, wearing hoods of green, gold, or dark blue (indicating, respectively, the M.D., M.A., or Ph.D.), recessed to a stirring Handel march and scattered to celebrate with their families and begin their careers.

MATTHEW C. WIENCKE

## Dartmouth expertise leads to a new way to attach limbs

It's irritating when your shoes that fit so comfortably in the morning are unbearably tight by nightfall. But it's downright embarrassing when your artificial leg falls off as you're getting out of your car, or riding your bike, or just walking up the street.

What?! That's right. Getting a perfect fit for an artificial leg can be tricky: what feels right in the prosthetist's office may not feel so great later on. That's because the residual limb—which used to be called the stump—can shrink and swell during the day and interfere with how a suction-fitted limb stays attached.

**Leg:** Dartmouth orthopedic surgeon Michael Mayor, M.D., is all too familiar with that problem. He lost a leg to cancer at age 17 and has been getting around on an artificial one since the 1960s. Pretty soon he'll be helping to test a new kind of artificial leg, one developed with his input by Simbex, a Lebanon, N.H.-based R&D firm.

A contraction of "Simply Better Exercise," Simbex is one of several high-tech companies founded by fluids engineer Robert Dean, Sc.D., an adjunct professor of engineering at Dartmouth. Dean has an artificial leg, too. He lost his real one some 60 years ago "in a crawler tractor—it ate my leg up through the knee joint," he says.

Until the early 1990s, Dean's artificial leg—an older model held in place with straps—fit

fine. But then he lost 40 pounds while recuperating from what he describes as a "near-fatal heart attack." He replaced his old leg with a modern one equipped with a fiberglass socket that fits on the stump, like a thimble on a finger, and is held in place by suction. But Dean could not get his new leg to fit all day long.

"Tissue dynamics are complex," explains orthopedist Mayor. The socket can knead the residual limb, forcing fluid out. As that happens, the limb shrinks. On the other hand, the weight of the artificial limb can "produce a vacuum inside the socket, causing fluid to collect in the tissues," thus increasing the volume of the residual limb.

Dean noticed even small changes in volume. "I can feel a change of half a percent," he says. A 2% change made his leg wobbly, and at 6% he'd lose it.

"The number-one problem for lower-limb amputees is the fit of the limbs," says biomedical engineer and Simbex president Richard Greenwald, Ph.D. Prosthetists can make the artificial limb fit perfectly—in the office. But as the volume of the residual limb fluctuates, by as much as 10% over the course of a day, the socket loses suction and the artificial limb may become detached. In addition, an improperly fitting socket can irritate the skin and cause infections.

Dean spent nearly a decade attempting to resolve the problem the only way that he knew how—by inventing something better. Now, with Greenwald, he's created what they call the Active Contact System (ACS),



**This research participant is trying out the new Simbex limb on a treadmill.**

which allows the socket to monitor and respond to changes in the residual limb's volume. An incompressible liquid—a non-toxic, water-based material—is pumped into bladders inside the socket. As the limb shrinks, the bladders fill with fluid to compensate, and vice versa.

"This is biofeedback," Greenwald says. "The device responds to whatever the body is doing." There are over a million amputees in the U.S., he adds, and the ACS is suitable for "little old ladies as well as a 20-year-old."

**Idea:** Clinical trials are under way, and Mayor is testing the system, too. In fact, trying out Dean's inventions is nothing new for the orthopedist. "He and I lurched around on various prototypes," Mayor laughs. One early model was a "whirling, bubbling gadget." Another had bladders filled with wax. But Mayor discovered a problem with *that* idea when he left the leg in the trunk of his car on a hot day.

Laura Stephenson Carter

## In neonatal care, is more too much of a good thing?

"The more the merrier" can be said of friends, of flowers, and of fresh-baked cookies. But not of neonatal specialists, according to a pair of recent DMS studies.

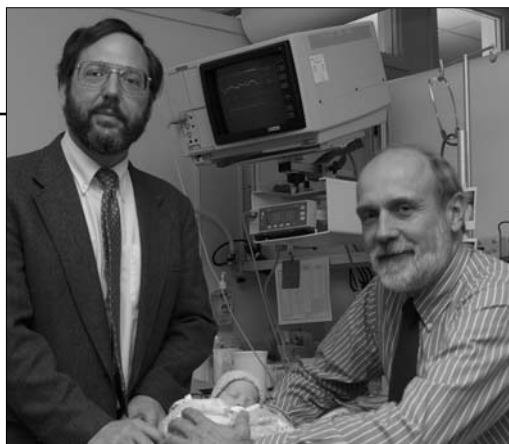
One team of researchers, led by pediatrician David Goodman, M.D., showed that newborns in intensive care units have a nearly uniform mortality rate, despite varying resources across the country. And a related study, led by Lindsay Thompson, M.D., compared neonatal outcomes in the U.S. to those achieved in three other countries.

Due to vast technological improvements—from new drugs to ventilators designed especially for babies—as well as to an increase in the number of neonatologists, a premature newborn's chance of survival has improved dramatically over the past 30 years. But a continuing increase in the supply of neonatologists and neonatal intensive-care resources may not be efficacious. "We seem to have reached the point where more neonatologists do not lead to further decreases in newborn mortality," explains Goodman, an associate professor of pediatrics and of community and family medicine.

**Data:** Goodman and his team collected data on the nearly 3.9 million infants born in 1995 with a birth weight of more than 500 grams (1.1 pounds). They then broke the U.S. into 246 neonatology service regions and divided the regions into five



JIM COOLE/AP



FLYING SQUIRREL GRAPHICS

Lindsay Thompson, in the left photo, and David Goodman (left) and George Little (right), in the right photo, spend a fair bit of their time in DHMC's neonatal intensive-care unit, but they have raised questions about the proliferation of such units.

groups—very low (for a very low ratio of doctors and beds to babies), low, medium, high, and very high. Then they looked at the association between resources and deaths.

In “low” areas (which had 4.3 neonatologists for every 10,000 births), the mortality rate was 7% less than in “very low” areas (which had a 2.7 ratio). But once the supply of neonatologists exceeded the “low” level, there was no significant difference in mortality. Low areas, with a 4.3 ratio, had nearly the same mortality rate as very-high areas, with an 11.6 ratio. There was also no difference in mortality as the number of neonatal intensive-care beds increased.

Whether more neonatologists and neonatal beds are beneficial in other ways remains unknown, but from a mortality standpoint “sheer numbers of beds or neonatologists don’t make much of a difference,” says Goodman. The study was published in the *New England Journal of Medicine*.

**Spectrum:** Thompson’s study, which was published in *Pediatrics*, compared the whole spectrum of neonatal care in the U.S.—from pregnancy to birth

to specialized care after birth—with that of three other countries: Canada, Australia, and the United Kingdom. She found that the U.S. has far more neonatal intensive-care resources, puts less emphasis on prenatal care, and has a lot more low-birth-weight, at-risk babies. The other three countries have fewer neonatal resources, put more emphasis on prenatal and reproductive care, and have a lot fewer at-risk babies.

Of the four countries, the U.S. has 40% more neonatologists than the next-best-staffed country, Australia, even after accounting for the greater number of high-risk babies. The U.S. has 8.0 neonatologists per 1,000 low-birth-weight births, whereas Australia has 5.7, Canada has 5.5, and the United Kingdom has 3.7. But neonatal mortality rates are about the same in all four countries; the U.S., with more resources, does no better.

“It really challenges our kind of current health-care system, which is expanding neonatal intensive care,” says Thompson, an instructor in pediatrics. “It looks to me that we probably don’t need to expand it anymore.”

Thompson believes the U.S.,

which has some of the highest rates of unintended pregnancies and of low-birth-weight babies among industrialized nations, needs more prenatal services and better funding for and access to reproductive care. “Neonatal intensive care is high technology at its best. . . . You see these tiny babies hooked up to lots of machines—it’s very expensive and it’s very successful up to a point.” Unfortunately, she adds, “the benefits are a lot more obvious when you save one baby compared to making sure that hundreds of thousands of women receive adequate prenatal care.”

**Trend:** Pediatrician George Little, M.D., who was a coauthor of both studies, says the growth of neonatal intensive care in the U.S. has happened without explicit public planning or solid accountability. He says the trend away from accountability and toward deregulation is similar to what has happened with airlines, banks, and utilities.

“Accountability is fundamental,” maintains Little. “The question we need to ask about neonatal intensive care is ‘Are we really getting the most out of this as we should?’”

MATTHEW C. WIENCKE

## 8x8 study prompts a deluge in the press (as well as in puns)

The “Media Mentions” section of this magazine (see page 18) couldn’t begin to contain the recent deluge of press coverage provoked by Heinz Valtin, M.D., a kidney specialist and the Vail and Hampers Professor Emeritus of Physiology at DMS.

A *Wall Street Journal* story in May leaked word of an article that Valtin was working on (titled “Drink at Least Eight Glasses of Water a Day—Really? Is There Scientific Evidence for ‘8x8?’”) prior to its scheduled online publication by the *American Journal of Physiology (AJP)*.

**Outlets:** Suddenly, reporters from all over the country and the world—and from media outlets as diverse as the *Dallas Morning News*, *Yahoo! News*, and National Public Radio’s *Morning Edition*—were clamoring for interviews. “I’m ready for it to be over,” says the normally buoyant Valtin with a perceptible sigh.

Why all the fuss? Valtin’s review article, undertaken at the invitation of the *AJP*, found no evidence to support the vigorously promoted assertion that drinking at least eight 8-ounce glasses of water a day (known as the “8x8” rule) is essential to good health.

Not only did Valtin not find any benefit in following the supposed rule for healthy, mostly sedentary people in a temperate climate—the vast majority of 8x8 proponents—but he noted that, in some cases, drinking



too much water can cause harm.

Nevertheless, devoted water-drinkers were incensed by the mere mention of his study, as reporter Lini Kadaba discovered when she interviewed a few for the *Philadelphia Inquirer*. "I don't believe it," said one fitness trainer when Kadaba asked him about Valtin's article. He wasn't planning to cut back on his consumption, usually a gallon a day, nor were any of the other water-bottle-toting Philadelphians whom Kadaba spoke with.

Those who never took to water in a big way are delighted, of course; now they can stop feeling guilty in the presence of their constantly sipping brethren. Some, such as *Wall Street Journal* reporter Betsy McKay, suggested it's the bottled-water industry that promotes 8x8. "We may not be as dehydrated as bottled-water makers would have us believe," McKay wrote.

Given the strong feelings on both sides of the water issue, as well as the suspicion that marketers are creating "health information"—not to mention the plethora of punning opportunities inherent in the topic—it's no wonder the media has waded in so gleefully.

**Ruckus:** Heinz Valtin, meanwhile, says that he had no intention of causing such a ruckus. About a year ago, motivated by skepticism in the medical community and uncertain of the origin of 8x8, the *AJP* editors asked Valtin to do a thorough review of the literature to determine if there was any scientific justification for drinking so much water. Valtin, the author of three text-



**Dartmouth physiologist Heinz Valtin has been inundated with e-mails and phone calls from reporters all over the world, ever since the online release of a review article he was invited to write on the scientific justification (or lack thereof, as it turns out) for the recommendation to drink at least eight 8-ounce glasses of water a day.**

books on the kidneys and water balance and a researcher in the field for more than 40 years, was a natural choice. Enlisting the assistance of Dartmouth biomedical librarian Sheila Gorman, he undertook a 10-month survey of the scientific literature—and came up dry.

"I want to emphasize that I found no scientific evidence to back up 8x8," Valtin says. "I'm talking about randomized trials published in peer-reviewed journals." Nor did he find a definitive origin for the 8x8 recommendation, though he suspects a misreading of a 1945 federal report. That report said people need about 64 ounces of fluids a day, adding that much of it is contained in food—a caveat Valtin believes was overlooked.

A high water intake does benefit certain people, such as those who suffer from kidney stones or who work or exercise outdoors on a hot day. "The problem is that it's a universal recommendation," Valtin says, "and I want people to be aware that plain water can be harmful,

or even fatal." Under certain circumstances, excess fluids can cause water intoxication, a condition that occurs when the kidneys cannot keep pace with water intake. The body retains water, diluting solutes in the blood and causing cells to swell. When brain cells swell, the result is mental disorientation, followed by seizures and even death.

Valtin's article cites several cases of hyponatremia, or water intoxication, among them a 16-year-old girl taking the drug Ecstasy for the first time. The drug, which produces intense thirst, apparently interfered with her normal kidney function.

Water intoxication can also occur in diabetic patients taking certain medications and is being reported with increasing frequency among endurance athletes. Though such cases are not common, they refute the assumption that drinking excess water is harmless.

In the absence of disease or other interference with the osmoregulatory system, the body maintains water balance either

by releasing antidiuretic hormone (ADH) or by producing thirst. This finely tuned system can also slow down evaporation through the skin and signal the kidneys to release water back into the body when needed. "The body's own system is quick to restore water balance in healthy persons," Valtin says, noting that (also contrary to myth) thirst occurs before the onset of dehydration.

Further annoying 8x8 adherents, Valtin presented evidence that juice, milk, and even caffeinated beverages and beer—in moderation—can be sources of fluid intake. When these beverages are counted, Valtin says, the average daily intake for adult Americans is 1,700 milliliters, just shy of the 8x8 water-only target of 1,900 milliliters. And that average doesn't include the water content in fruits, vegetables, and other solid foods.

"I would argue that for the time being, the burden of proof that everyone needs 8x8 should fall on those who persist in advocating the high fluid intake without, apparently, citing any scientific support," Valtin concludes. Except under special circumstances, he maintains, "we probably are currently drinking enough and possibly more than enough."

**Tide:** By November, when the *AJP* is scheduled to publish his article in its print edition, Valtin—who has encouraged anyone with good data supporting 8x8 to come forward—will probably be more than ready to see the tide of questions stemmed.

CATHERINE TUDISH

## New psychiatry chair is bringing three NIH grants to DMS

When Peter Silberfarb, M.D., who has headed the DMS Department of Psychiatry since 1986, steps down as chair in November, Harvard psychiatrist Alan Green, M.D., will step up to fill the seat.

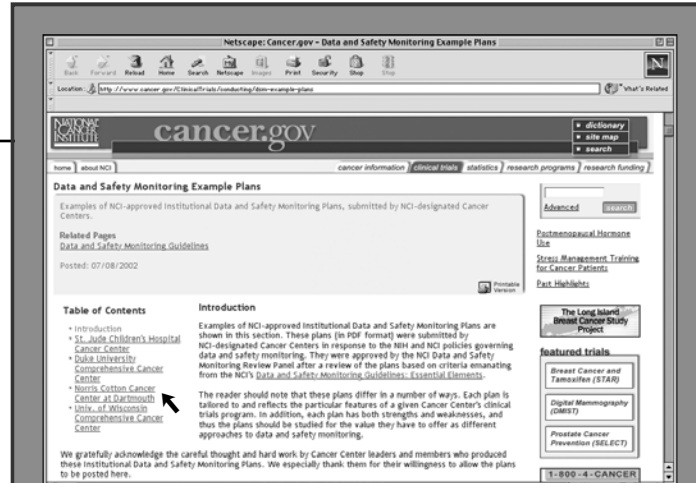
"I am excited about the opportunity to become chair of Dartmouth's Department of Psychiatry, a first-rate department with a reputation for excellence in clinical care, teaching, and research," says Green.

"I look forward to working with members of my department and with faculty and staff from throughout the Medical School and Medical Center to continue and even to enhance the department's position of leadership in the clinical and academic aspects of psychiatry."

Green will also be bringing his clinical and animal research program—and a few collaborat-



New psychiatry chair Alan Green



This page on the National Cancer Institute's Web site lists as models the clinical trials protocols of four cancer centers—including Dartmouth's.

## Clinical trials plan is held as a model

Dartmouth's Norris Cotton Cancer Center recently became one of just four cancer centers nationwide whose clinical trials protocols were held up as national models by the National Cancer Institute (NCI).

A final step in the approval of any promising new cancer treatment is a clinical trial, when researchers test a new drug or therapy on human patients. Of course, patient safety is the paramount concern in conducting such trials. The Norris Cotton Cancer Center's "Clinical Trials Safety and Monitoring Procedures" were posted on the NCI Web site in July as a model for other cancer centers nationwide. The other three institutions whose plans are also posted are Duke, the University of Wisconsin, and St. Jude's in Memphis, Tenn.

All four institutions' plans can be downloaded by going to [www.cancer.gov/ClinicalTrials/conducting/dsm-example-plans](http://www.cancer.gov/ClinicalTrials/conducting/dsm-example-plans).

"We place the highest priority on ensuring the safety of patients participating in clinical trials," explains Dartmouth oncologist Raymond Perez, M.D., director of the Phase I Clinical Trials Program at Norris Cotton. "Procedures to insure the safety and integrity of clinical trials, and development of newer, better cancer treatments, really go hand in hand."

The strength of Dartmouth's plan, adds Priscilla West, director of Norris Cotton's Clinical Research Office, is that "it is concise and logical. . . . It establishes clear lines of oversight for all levels of research activity, from the nitty-gritty details of data collection to the broader issues of patient informed consent and patient safety. There is also an effective system of checks and balances, ensuring that patient safety issues do not fall through the cracks.

"The degree to which Dartmouth investigators and research staff are personally committed to patient safety and well-being" is another mark of distinction in West's book. Patient safety is "wholeheartedly supported at all levels," she says. R.E.M.

ing investigators—to DMS. In addition, he will serve on the advisory board of Dartmouth's new Neuroscience Center. It will link DHMC, DMS, and Dartmouth College neuroscience experts under one umbrella, blending clinical neuroscience, basic neuroscience research, and cognitive neuroscience research.

**Inception:** Green has directed Harvard's Commonwealth Research Center (CRC) since its inception in 1987. The CRC, which is based at the Massachusetts Mental Health Center, is a clinical research center for the study of patients with severe mental illness. Green also heads the center's office of research administration and its neuropsychopharmacology laboratory and is on the medical staff at the Brigham and Women's and Beth Israel-Deaconess Hospitals.

An active researcher and the principal investigator for three ongoing grants funded by the National Institutes of Health, he heads programs that involve clinical and biologic studies of patients with schizophrenia and related psychiatric disorders. His work focuses on the action of atypical or novel antipsychotic drugs like clozapine.

Clozapine is a relatively new medication for patients with schizophrenia and other disorders, especially those who have not responded to standard antipsychotic drugs like haloperidol, chlorpromazine, and fluphenazine. Traditional antipsychotics, which block dopamine receptors in the brain, control "positive" symptoms like hallucinations, delusions, and confu-

sion. But new antipsychotics like clozapine block a broader range of receptors—for dopamine, serotonin, and norepinephrine—and can be used to treat a wider array of schizophrenia symptoms, including “negative” ones like lack of motivation.

One strand of Green’s research seeks to understand how clozapine works and to determine whether early intervention with this drug (or other novel agents) is able to improve the long-term course for people with schizophrenia.

Another strand involves exploring a finding that clozapine limits substance abuse in patients who have schizophrenia (about half of those with schizophrenia also abuse alcohol or other substances).

In addition, Green is collaborating on studies of the effects of antipsychotics on patients’ hormone systems, particularly in women with schizophrenia.

**Education:** Green received his undergraduate education at Columbia and his medical degree from Johns Hopkins. He did his clinical training at Harvard, Beth Israel Hospital, and the Massachusetts Mental Health Center and also held a research fellowship at the National Institute of Mental Health. He then was a clinical fellow in psychiatry and a senior research fellow in psychiatry at Harvard, before joining the faculty there. He is currently an associate professor of psychiatry at Harvard.

Green’s wife, Frances, is a trial lawyer, and they have eight-year-old twins, Isobel and Henry.

LAURA STEPHENSON CARTER



Anne Brisson, left, pictured here with Handicap International medic Luljeta Parashumti, helped destroy some landmines in Kosova. She didn’t need the protective gear, however—she only tried it on to see how heavy it was.

## DMS helps clear land mines from Kosova

**D**MS administrator Anne Brisson, Ph.D., M.P.H., helped to destroy some of the last landmines in Kosova—and she has a certificate from the United Nations to prove it.

As the administrative director of the Dartmouth-Kosova Project, Brisson travels to the Balkans frequently to work on DMS’s collaborative efforts with the Prishtina School of Medicine and other organizations. On her latest trip, she met with officials of Handicap International (HI) to discuss how DMS faculty and students could help train medics who are part of HI’s Mine Action Team. She even became a member of the team herself, at least for a little while.

“I blew up two antipersonnel mines,” she says. “These landmines are small, a little bigger than a hockey puck . . . and would probably blow your foot off if you stepped on one.” The mines had been found a few days earlier in an area a couple of hundred feet from a road and within sight of a school. They were brought to a training site and detonated safely. “I sprayed foam explosive on one of the mines,” explains Brisson. Then she activated a handheld device that detonated a fuse attached to the mine. The resulting explosion was “more of a pop, with some black smoke rising,” she says.

Brisson, who has also “worked with Kosova Albanians who have lost loved ones to landmine injuries,” was glad to be “getting rid of mines meant to maim or kill people.”

Once she was back in the U.S., Brisson continued to facilitate the exchange program between Dartmouth and Prishtina. Several Kosovar students arrived in the Upper Valley in August for a month’s stay. And later this fall, DHMC orthopedic surgeons John Nutting, M.D., and Michael Sparks, M.D., as well as fourth-year medical student Timothy Pieh, plan to travel to Kosova to provide life-support training to medics who are involved in HI’s mine-clearing project.

L.S.C.

## Harvard epilepsy expert is new neurology chief

Neurologist Gregory Holmes, M.D., will never forget the girl in his high-school class who had epilepsy. “She would have these seizures in the middle of class, fall on the floor, start jerking, and the teacher had no idea what to do,” he remembers.

“As students, we just had to ignore her. It was like she had leprosy, because nobody wanted to go near her. To this day, I still think about her.”

Holmes has spent his entire career trying to understand and treat the brain disorder that afflicted his young classmate. Come November, he will be bringing his epilepsy research team to DMS when he becomes chief of neurology, succeeding the recently retired Alexander Reeves, M.D. (See page 5 for Reeves’s retirement plans.)

**Seizures:** A professor of neurology at Harvard Medical School,



New neurology chief Gregory Holmes

MRIC/MULTIMEDIA / CHILDREN'S HOSPITAL

Holmes has been directing the Center for Research in Pediatric Epilepsy at the Children's Hospital in Boston. His work has focused on how seizures affect brain development.

**Brains:** Immature brains are less likely than mature brains to be physically injured by long seizures, he says, but repeated seizures in young brains can lead to permanent cognitive damage. Holmes's team has been developing neuroprotective agents that may, one day, be used to treat epilepsy patients.

He is also eager to integrate DHMC's clinical neurology programs with DMS's basic neuroscience research. "I don't think you can really separate the clinical aspects of neurology from the basic science aspects," notes Holmes. "Oftentimes clinicians do not really understand what's going on in the basic sciences, and at the same time the basic scientists really do not understand what's happening clinically. I think both would benefit enormously by a dialogue."

In addition to serving as neurology chief, Holmes will be on the advisory board of the newly established Neuroscience Center at Dartmouth. It will link all Dartmouth neuroscience experts under one umbrella, blending clinical neurology and neurosurgery, basic neuroscience research, and cognitive neuroscience research.

At DMS, for example, ongoing work on sodium channels has relevance for epilepsy treatment. "It's very nice to take a basic scientist who's been working with sodium channels, and may not



Geurkink is pictured here in her backyard, with ferns like those in her poem.

### Finding poetry in out-of-the-way places

The author of the poem below is Kate Geurkink, A.R.N.P, a nurse practitioner at DHMC. Her poem was published in *The Pharos*, the journal of the national medical honor society Alpha Omega Alpha. Geurkink is the coordinator of DHMC's Poetry Project, through which patients are encouraged to use creative writing as a source of healing.

Poetry, she explains, can offer patients hope in difficult circumstances. "The fern to me is the metaphor for . . . staying and growing through rugged and roughened places—just like we might have to do with disease sometimes." M.C.W.

#### The Ferns

Small sprouts—on forest floor,  
alien to me but—  
pushing up from nothing . . .

No special care,  
No priming  
No tedious tending.

You rise—growing  
In roughened areas  
Again and again  
With gorgeous greenery.

I see—unfolding  
unfurrowing  
unwinding . . .

Soft in your presence  
Of not giving up.

Quiet beauty of the forest—  
You reveal yourself with the seasons—  
Faithfully filling in the empty spots

Where there was nothing but tangle  
There is now the rich green, hopeful growth.

even know that they're important in epilepsy, and show them a patient who has a seizure disorder—expose them to something they could actually help with," says Holmes.

Holmes earned his M.D. in 1974 from the University of Virginia School of Medicine and did residencies in pediatrics at Yale and in pediatric neurology at Virginia. From 1979 to 1986, he was on the faculty at the University of Connecticut Health Center, and he spent two years at the Medical College of Georgia before joining the Harvard faculty in 1988.

**Boards:** He has served on many editorial boards, as well as on National Institutes of Health committees, and has held leadership roles in professional societies, including as a member of the board of directors of the American Epilepsy Society. In addition, he has published hundreds of journal articles, abstracts, and book chapters and has traveled the world giving presentations on epilepsy.

Holmes and his wife, Colleen, a research nurse at Dana-Farber Cancer Institute in Boston, look forward to moving to the Upper Valley this fall. They have two sons: Marcus recently graduated from the University of Virginia, and Garrett is a sophomore at Dartmouth College.

And what about that girl who may have launched Holmes's career? "She'd do much better today, thanks to a lot of the developments," he says. "We've come a long way, but we've got a long way to go."

Laura Stephenson Carter

## Wireless network lets providers share information

When Guglielmo Marconi began experimenting with radio waves in 1894, little did he know how thoroughly wireless communication would revolutionize the world. Today at DHMC, doctors use wireless technology to connect their laptop computers to the network so they can show medical information to patients or print patient-friendly medication descriptions.

"I make it a routine policy to turn the screen towards the patient as we review labs, other providers' notes, and studies," says internist Joshua Lee, M.D. "It goes a long way towards demystifying care."

**Share:** Much medical information, including patient records, is in electronic form nowadays—but it hasn't always been easy to share it with patients. Putting computers in exam rooms means doctors must log off and on the network between each patient. But with a wireless system, they can carry a laptop from exam room to exam room—or to offices or meeting rooms—while still logged on.

With "medical care increasingly complex and . . . fragmented," says Andrew Gettinger, M.D., director of DHMC's Clinical Information Systems (CIS), "an information system [that is] well-designed and clinician-friendly can help."

"DHMC is a leader in wireless technology both locally and nationally," says chief informa-



CLIFF VEJENSK

Cloe Shelton is leading this pack of her Dartmouth cycling teammates.

## Medical student has pedal to the metal

Whether she was studying hard in anatomy and biochemistry or helping the Dartmouth cycling team capture a national championship, Cloe Shelton—now a second-year medical student—quickly made a mark last year on the Hanover community. "Biking gives you a mental break that allows you to not think about school," says Shelton, who finished in sixth place individually at the Division II collegiate nationals in May. "Every time I felt overwhelmed, it all worked out. The hardest part was just giving two hours a day to biking and not stressing about the time commitment."

After earning a number-two women's expert ranking in Colorado the summer before starting medical school, then racing throughout New England in the fall, Shelton started training with the Dartmouth cycling team in January of 2002. Because cycling is a club sport, Shelton is able to compete despite her graduate-student status.

"I really like road biking," she says. "It's really different from mountain biking, where you're in the woods by yourself a lot. I have the most fun when I'm biking with other people." Being on the team in the spring forced Shelton to budget her time even more wisely than she had done last fall. What study techniques have allowed her to excel academically, bike, and also maintain interests such as snowboarding, reading, and watercolor-painting? "I don't really do anything special," she insists. "I do try to go over what we've done in class each day. I make long vocabulary lists of words I heard that day, so I've seen the material at least once when I go to study for a test."

Shelton already has lots of fans at DMS. "Cloe has been blessed with . . . a remarkable intellect [and] enviable athletic ability, and yet those talents are all wrapped up in the most unassuming package," says anatomy professor Matthew Heintzelman, Ph.D. He explains that he and his colleagues "quite literally stand around shaking our heads, just marveling at her sheer talent. But the neat thing is that the conversation always ends with remarks about what a nice human being she is. It's simply a joy to have people like Cloe around." K.M.

tion officer Peter Johnson. "It's been three years since our full-scale deployment, while most academic medical centers . . . are just now starting to deploy wireless." Dartmouth began using wireless devices to manage inventory in the 1980s, and clinicians have been using wireless PCs since 1999.

"We are committed to providing wireless access where needed throughout our clinical settings," says Ernest LeBlanc, director of technical services. So far, wireless computing is available at the Lebanon campus and at clinics in Concord, Bedford, Manchester, and Nashua, N.H.

Today, some 160 clinicians in 27 specialties use wireless laptops to access records in the CIS, document patient encounters, enter medication or allergy information, check online pharmacology references, or e-mail referring doctors. "Documentation and prescription-writing improve when they're done at the point of care," says Johnson. "There is no rework, fewer mistakes, and vastly improved quality."

**System:** Security is a concern with wireless networks, however. Fortunately, DHMC already had a solid security system in place—based on Kerberos authentication software, developed at MIT. Kerberos encrypts data so eavesdroppers see only "gobbledygook," says LeBlanc.

While wireless computing undoubtedly makes physicians' jobs easier, its main goal is to provide superior clinical care. "If we do that well, everything else will follow," says Johnson.

ROBYN E. MOSHER

## Researchers ask: What counts as a cancer death?

In measuring medicine's progress against cancer, the best indicator is the cancer mortality rate. That would seem to go without saying. But two Dartmouth physicians—H. Gilbert Welch, M.D., M.P.H., and William Black, M.D.—say that yardstick is not as reliable as it could be.

An article they coauthored—titled “Are Deaths within One Month of Cancer-Directed Surgery Attributed to Cancer?”—concludes that not all cancer-related deaths are properly attributed to the underlying cancer.

Welch and Black are both affiliated with DMS's Center for the Evaluative Clinical Sciences. Welch, an internist at the White River Junction, Vt., VA Medical Center, recently returned from a sabbatical at the World Health Organization's International Agency for Research on Cancer (see the adjacent story for details on his time there). And Black is a radiologist at DHMC.

**Belief:** Much of their research over the past decade, on the efficacy of screening and diagnostic testing for disease, has called into question the belief that early detection and treatment produce unmitigated benefits for patients. In looking specifically at cancer, Welch explains, “We're trying to make judgments about how well we're doing against the disease. But who gets counted as a cancer death—people who die from the disease itself or those who die from the treatment?”



## Getting a global view on cancer

**W**hen Dartmouth internist H. Gilbert Welch, M.D., M.P.H., was offered a 10-month sabbatical as a visiting scientist in Lyon, France—at the World Health Organization's (WHO) International Agency for Research on Cancer (IARC)—he leapt at the chance.

He returned to the Upper Valley a few months ago, having had a productive stay working on, among other projects, the manuscript for a book titled *Should I Be Tested for Cancer?* Scheduled to be published in 2003 and written for a general audience, it “walks readers through the downside of cancer testing,” he explains, including unnecessary treatments.

During his sabbatical, Welch also helped the IARC's director write a book chapter, worked on two articles for the *Journal of the National Cancer Institute* (see the adjacent story for details on one of them), and served as a member of the WHO's Working Group on Breast Cancer Screening, which recently concluded that women over 50 years old do benefit from breast-cancer screening mammograms.

And by interacting with the international scientific community, he developed a greater appreciation for such issues as the variation in interpreting mammography from country to country. “In Europe, radiologists are less likely to say a mammogram is abnormal” than in the United States, he says.

Welch also relished the chance to live abroad with his family—wife Linda Doss and teenage daughter Heather. It was his first experience with city living as well, since he grew up in Boulder, Colo., and now lives in the rural community of Thetford, Vt. In Lyon—France's third-largest city, with an urban-area population of over a million—they even got along without a car, since public transportation is so good.

Welch admits that he struggled with speaking French, even though he took classes offered by the IARC. Luckily, “the language of science is English,” he says. “The typical IARC meeting would start with a little bit of French . . . then break into English. The people at work spoke wonderful English.”

But he says he learned enough French to “order beer, order a cup of coffee, and even attempt to give directions.” L.S.C.

“The main purpose of this paper,” Black explains, “is to show the medical community that cancer deaths are being undercounted.” The article appeared in the July 17 issue of the *Journal of the National Cancer Institute* and was a follow-up to a study published in the February 6 issue of the same journal.

**Rates:** In the earlier article, titled “All-Cause Mortality in Randomized Trials of Cancer Screening,” Black and Welch and their DHMC colleague David Haggstrom, M.D., concluded that analyzing only disease-specific mortality rates is likely to result in trials biased in favor of screening, because of misclassifications in the cause of death. For a more accurate analysis of the efficacy of screening, they propose including an alternative endpoint, all-cause mortality, which “depends only on an accurate determination of deaths and when they occur.”

Basing their recent study on the assumption that all deaths within one month of cancer-related surgery should be attributed to the cancer, Welch and Black analyzed data from a five-year period (1994-1998), examining the recorded cause of death in patients diagnosed with one of 19 common solid tumors, such as of the breast or lung.

Of the 4,135 deaths among patients with one cancer, 1,707 (41%) were attributed to a cause other than the cancer. The number of deaths not attributed to cancer varied widely, though, from 12% for cervical cancer to 81% for laryngeal cancer.

While the number of incor-

rectly attributed deaths is obviously high among this study population, adding these numbers to the overall cancer death rate seems at first glance to make only a modest difference. Factoring in deaths within one month of surgery, the undercount would be approximately 1%. If the interval is increased to four months, the undercount would be 2%. And if all deaths within a year of cancer surgery are attributed to cancer, then the undercount would be 4%.

**Trivial:** “By itself, one percent looks trivial,” Black says, “but one or two percent starts to look like a big deal in the context of 10 percent.” He is referring to the 10.7% decrease in overall cancer mortality (excluding only lung cancer deaths) from 1973 to 1998. Including lung cancer skews the picture, Black says, because of the recent dramatic rise in lung cancer among people who began smoking 30 to 50 years ago. When lung cancer deaths are added, the decrease in mortality drops to 0.3%.

“A modest proportion of the reported decrease in non-lung cancer mortality could be a result of the misclassification of deaths from cancer-directed surgery,” Welch and Black wrote in their article. “Equally important, this misclassification may be indicative of more widespread confusion about how to code treatment-related deaths in patients with cancer.”

They do concede that no clear guidelines exist for classifying deaths related to cancer treatment. Using the World Health Organization’s definition



## A is for apple (and also for arsenic)

New England’s apple orchards have always made good calendar art, conjuring up associations with health, purity, family farms, and—of course—Mom and apple pie. Few people look at apple orchards and think “Paris Green.” No, that is not a reference to Michelin’s “green guide” to the City of Light. Paris Green, a toxic compound made primarily of arsenic and lead, was once a popular fungicide and insecticide. It was applied liberally to fruits—apples in particular—for more than a century until a better pesticide came along. That pesticide, which made its debut in the 1950s, was DDT.

Renewed interest in the toxicity of arsenic in drinking water recently led investigators from Dartmouth’s Center for Environmental Health Sciences to examine the legacy of arsenical sprays on old New Hampshire orchard sites. Well-water in the state has been found to contain elevated levels of the toxin, and orchards were a prime suspect as a source.

The evidence is now in, and the orchards have been vindicated, according to Christine Wong, a graduate student who worked on the study with three members of the earth science faculty. After analyzing soil profiles and stream sediment cores, and correlating that data with land-use histories, the group concluded that most of the arsenic sprayed on apple trees drifted to the ground beneath the trees and stayed put. In undisturbed orchards it is still there, in the top six to ten inches of soil, along with the lead component of the sprays. Wong reported these findings at the spring 2002 meeting of the American Geophysical Union in Washington, D.C.

Although the evidence that arsenic is relatively immobile in surface soils may seem comforting, Wong warns of another concern. Population pressures in New England are radically altering the landscape. Old orchards are being chopped down and dug up to accommodate housing developments.

“These sites have been fine while left alone for 50 or 60 years,” Wong explains. “But if they’re disturbed by bulldozers, will the arsenic be exposed to weathering, increasing surface runoff?” The investigators are now working on finding an answer to that question in a new study. J.N.

of underlying cause of death as “the disease or injury which initiated the train of morbid events leading directly to death,” Welch and Black show how classification gets tricky.

A patient who had a lobectomy for an early lung cancer, for example, may be considered cured of cancer but could die of pneumonia six months later. Although the surgery increased the probability that the patient would contract pneumonia, the death would not now be counted as a lung cancer death. Similarly, some nonsurgical treatments for cancer can also increase a patient’s long-term risk of death. For example, radiation treatments can increase the chance that a patient will develop vascular disease.

Welch and Black make several recommendations for ensuring a more accurate record of cancer mortality, including developing some simple rules—such as that all deaths within one month of surgery, radiation, or chemotherapy should be attributed to the related cancer. They also point out that a trend toward misclassification of cause of death has accompanied an increase in early detection of cancer.

**Trends:** Finally, they sound a distinctive note of alarm, concluding, “The more we look for cancer and the more we treat people with the diagnosis, the more important it will be to properly assign diagnostic and treatment-related deaths. Otherwise, observed mortality trends may make harmful interventions appear beneficial.”

CATHERINE TUDISH

## Let's sit down together and talk about your problem

Suppose that you're a senior citizen with one or more chronic diseases, along with all the other nuisances of advancing age, and that you visit your physician two or more times a month—getting lots of attendant lab tests, x-rays, and other support services.

**Visit:** Now suppose that instead of a frantic 12- to 15-minute appointment, you were offered a one- to two-hour visit every month (or even twice a month), and not only with your doctor but also with a pharmacist to answer questions about your medications, a nurse to show you how to better manage your care, a physical therapist to help you get proper exercise, and a dietician to teach you some better eating habits. All of that in a leisurely time frame so you don't fry your neurons trying to remember everything you're told while also formulating questions about the parts you don't understand. They might even throw in some coffee and donuts.

There is one catch—there will be half a dozen to a dozen other patients in the same room. Oops, there goes doctor-patient confidentiality! "Not necessarily," says Marjorie Godfrey, M.S., R.N., director of clinical practice improvement at DHMC.

Patients participating in what are called "group visits" are asked to sign consent forms and confidentiality statements, and only first names are used. Although there is no way to enforce confi-

## MEDIA MENTIONS: DMS

Among the people and programs coming in for prominent media coverage recently was kidney specialist **Heinz Valtin**, M.D. An article he was invited to write for the *American Journal of Physiology*—on whether there is a scientific basis for the recommendation to drink eight 8-ounce glasses of water a day—came in for a torrent of attention.



One reason may be the many punning opportunities the story offered. "The notion that everyone should try to drink at least eight glasses of water a day has seeped its way into the common consciousness," wrote the *Washington Post*. "Fitness experts have long claimed that drinking eight glasses of water a day is the wellspring of good health," said the *New York Post*. But, noted the *Arizona Daily Star*, "the conventional wisdom that you should drink at least eight glasses of water a day may be all wet." The *Toronto Star* described Valtin as "a scientist who undertook an exhaustive hunt for evidence backing all this water advice and came up mostly, well, dry." The *Winston-Salem Journal* warned of "a flood of lobbying from the bottled-water industry." And so on. For more on Valtin's article (as well as more puns—sorry, we couldn't resist either) see page 10.

Another faculty member who made multiple media appearances—though on a much more sobering topic—was Dr. **John Modlin**, chair of Dartmouth's Department of Pediatrics. He heads the national panel that deals with vaccine policy, a group that has been extremely active in the wake of bioterrorist threats involving anthrax and smallpox. "One of the biggest factors affecting the panel's decision not to make the [smallpox] vaccine more widely available is the risk of side effects associated with the vaccine, said Modlin," according to the *Baltimore Sun*. "This is a public health decision. There are many issues in the past where the public health interest does not jibe with the personal health interest," said Modlin in the *Washington Post*. And the *Los Angeles Times* reported that he "said the recommendation 'appropriately



balances the risks of the vaccine against the likelihood of a smallpox outbreak.'" See the profile on page 58 in this issue for more on the smallpox vaccination issue and Modlin's career.

A recent page-one Sunday *New York Times* feature by Gina Kolata detailed the work of Dartmouth's Center for the Evaluative Clinical Sciences. "A growing body of research is leading many medical experts to ask whether more is really better when it comes to health care. . . . 'If there are twice as many physicians, patients will

come in for twice as many visits,' said Dr. **John Wennberg** of Dartmouth Medical School, where much of the new work is being done." Kolata noted that "the Dartmouth findings are controversial" but said "the research is attracting attention from main-



stream medical groups. . . . 'They are excellent scientists,' said Dr. Yank Coble, president of the American Medical Association."

Kolata mentioned Dartmouth work in an article on medical statistics, too. It said the figures used by disease advocacy groups, while accurate, "may lead people to exaggerate their chances of getting and dying from a fearsome disease." A study in the



*Journal of the National Cancer Institute* "shows how the same numbers presented in different ways can have very different emotional tones. . . . Most statements about cancer risk 'are given in isolation, without context,' said the lead author of the new paper, Dr. **Steven Woloshin** of the VA Outcomes Group in White River Junction, Vt. 'Without seeing how they compare to other risks, it is hard to gauge what they mean.'"

The July issue of *Parents* magazine noted that "it can be scary when your baby's temperature soars. But do you really need to call the pediatrician?" The first step in managing a child's fever, said the article, is to "take her temperature. Your infant might not mind having her temperature taken rectally as much as you mind taking it. You can



& D H M C I N T H E N E W S

make it easier on yourself by holding her facedown on your lap with her feet off to the side, suggests **William Storo**, M.D., a pediatrician at Dartmouth-Hitchcock Clinic in Concord, N.H.”

“Having an unpleasant experience during a mammogram screening,” said the Reuters wire service, “may discourage women from having another mammogram, researchers report.” Women who have a negative interaction with the technologist or a high body mass index are less likely to have a repeat test, noted the study. “Further research should



focus on how best to coach women through the mammographic experience,’ Dr. **Patricia Carney** of Dartmouth Medical School and colleagues state in the July 15 issue of the journal *Cancer*.”

The *Cleveland Plain Dealer* wrote recently about competition among hospitals to establish neonatal-intensive-care units, saying that “they are perceived as glamorous places where miracles happen.” But such units’ proliferation is now being questioned. “Dr. **David Goodman**, a professor of pediatrics at Dartmouth Medical School, raised the collective ire of neonatologists last month when he published a study in the *New England Journal of Medicine* claiming that the U.S. has more neonatal resources than are needed to prevent the death of high-risk newborns.” See page 9 for details.



“Do patients fare best at hospitals that have the most experience with a procedure?” asked the *Fort Worth Star-Telegram*. The paper then described several recent studies which show that, indeed, “the differences among hospitals are striking.” Among the studies mentioned was one on the outcomes of 14 different types of cancer and heart surgery. “More than 20,000 Medicare patients die each year undergoing the surgeries, said the study’s author, Dr. **John Birkmeyer** of Dartmouth Medical



School in New Hampshire. ‘Approximately 2,500 of those deaths could be averted if all hospitals were achieving the same level of performance as very-high-volume hospitals,’ he said.”

*Wired* magazine, which covers the world of digital technology, recently reported on “a new breed of magnetic resonance imaging . . . called magnetic resonance elastography. ‘This technique tries to measure the stiffness of tissues, how hard it is,’ said **John Weaver** of Dartmouth-Hitchcock Medical Center in Lebanon, N.H. . . . ‘You can see subtler changes than you can with your fingers.’”

“The latest drug in the war on cancer is already sitting in your medicine cabinet,” according to *Reader’s Digest*. “A recent study followed 1,121 people who had one or more adenomas (cancerous polyps) removed from the large bowel. Three years later, researchers discovered that patients who took a daily 80mg dose of baby aspirin cut their risk of developing more adenomas by 19%.”



But it’s not a panacea. “Says **John Baron**, an internist at Dartmouth Medical School: ‘You can’t take these drugs and wave your doctor goodbye.’”

Angiogenesis—the process by which the body creates new blood vessels—has been a focus of cancer research for over 20 years. More recently, noted the *Orlando Sentinel*, angiogenesis has attracted the attention of cardiologists. “Said **Michael Simons**, a leading researcher in the field and chief of cardiology at Dartmouth Medical School, ‘If extra vessels can lead to tumor growth, can we grow extra vessels in the heart to do some good?’”



Smoking in the movies continues to attract media coverage. Said the *Los Angeles Times*, “Researchers at Dartmouth Medical School in a recent study concluded that children who viewed the most smoking images in movies were more likely to have smoked.” The study’s principal investigator was pediatrician **James Sargent**, M.D.

dentality, Godfrey is not aware of any blatant violations among the practices that are pioneering this new way of delivering medical care.

The concept of group therapy—a group visit with a psychologist or psychiatrist—has a long and productive history, despite the fun poked it in the 1970s on TV’s *Bob Newhart Show*. Because of confidentiality concerns, only a few psychotherapists used groups before World War II, though at least one such group, Alcoholics Anonymous, evolved into a free-standing movement. After the war, the large number of soldiers requiring care compelled psychiatrists to treat them in groups. The method proved so effective that it spread rapidly into civilian psychotherapy.

**Principle:** The same principle is now being applied in many medical specialties. Group techniques are as varied as those of individual therapies, but one central theme is to create a mutually supportive atmosphere.

Kaiser Permanente has been experimenting with groups since 1991 and has enumerated many advantages for the concept: (1) Patients and providers get to know each other personally, and participants feel they are known as an individual and not just as “the gall bladder case.” (2) Patients realize that they are not the only ones with a given problem. (3) Most feel that they learn more, and many benefit from questions asked by more assertive members of the group. (4) Ample time is available for detailed answers to questions. (5) And the major advantage, one

not anticipated by the organizers, turns out to be social. A group quickly evolves into a tight-knit “family” that often holds social gatherings outside the therapeutic setting.

The Kaiser group was not organized around any particular theme or illness. Members were invited to join because of their age and their frequent use of the health-care system. Even so, the number of individual physician visits among the patients decreased, there was greater job satisfaction among the caregivers, and there was a shift from physician to nonphysician care-giving, which increased physician efficiency. The fact that patients’ emotional needs were being dealt with more effectively led to a drop in physical complaints. And there was also a decrease in lab and x-ray orders.

**Counsel:** Godfrey says DHMC-affiliated clinics in southern New Hampshire, in the seacoast and Nashua areas, began to use group visits in 1999. They started a variation on a concept called DIGMA, for Drop-in Group Medical Appointment. An hour every Friday afternoon is reserved for any patients who would like to avail themselves of the counsel of a physician and his or her assistants. DIGMA participants are, therefore, a self-selected group—you come if you want to participate.

At DHMC’s Lebanon campus, group visits are now used for a range of conditions, including patients about to have joint-replacement or stomach-reduction surgery, patients with diabetes or hepatitis C, and prenatal pa-



DMS faculty member Munro Proctor, left, has spent three to four months every year working in Cameroon ever since his retirement. Here, he shows an image on his digital camera to a group of Cameroonian villagers.

## A life-changing experience in Cameroon

Imagine delivering triplets in an African village so remote it can be reached only on foot or by helicopter. Or analyzing “verbal autopsies”—accounts by African families of a relative’s death—in an effort to determine a diagnosis. Students from Dartmouth and other medical schools are doing such work in Cameroon, where their mentor is Munro Proctor, M.D., a retired adjunct associate professor of medicine at DMS and co-founder of the Concord, N.H., Clinic.

Proctor is now a contact for medical students across the country who wish to do a fourth-year elective overseas. After retiring in 1989 from a 32-year career practicing cardiology and internal medicine in Concord, Proctor earned his M.P.H. and since then has been spending three to four months every year working in (and bringing students to) two large Baptist mission hospitals in Cameroon.

Andrea Siddons Cedfeldt, a recent DMS graduate, worked with Proctor there treating AIDS patients. Her primary charge was to create a computer program for monitoring mother-to-child transmission of the AIDS virus after administration of the drug Nevirapine. In Cameroon, the transmission rate averages 30% if the mother is HIV-positive. When Nevirapine is administered to the mother during labor and to the baby within 72 hours of birth, the transmission rate is cut to 15%.

For the medical students who get to spend time in Cameroon, the experience can be life-changing. “They tend to see things that they have never seen before,” explains Proctor. “Typhoid is not common around here, and it’s very common over there. Malaria, river blindness, Guinea worm—all these things that Jimmy Carter has been trying to eradicate—it’s an exciting clinical experience.”

M.C.W.

tients. Plans are in place to start a group for women interested in breast reduction surgery.

Condition-specific group visits usually include patients of various ages and in various stages of a specific disease. There are thus important lessons to be learned from those in more advanced stages of a disease by those more recently diagnosed. But such groups need to be carefully managed. A trained facilitator must be available to handle problems, such as the inevitable group member who tries to share misinformation.

Patients are usually invited to participate in a group by their caregiver. Of course, group visits are not a substitute for one-on-one care, which, at the least, must still be provided for those who do not wish to participate in groups.

**Payers:** In addition to patient preference, the biggest obstacle to instituting group visits is the reimbursement system. Third-party payers are not very amenable to innovative methods of delivering care, though Godfrey is quick to note that “Anthem Blue Cross-Blue Shield of New Hampshire has been extremely supportive of group visits, and negotiations about payment are currently ongoing.”

Yet DHMC plans to continue developing groups even if the reimbursement issue is not resolved. Godfrey and her colleagues are convinced that it’s the right thing to do, since the groups’ major advantage, as she emphatically states, is “patient satisfaction.”

ROGER P. SMITH, PH.D.

## FROM OUR PAGES

**"The Healer's Art"  
combats student and  
physician burnout**

Medicine involves two complementary efforts—healing the injured or ill, and preventing the injury or illness in the first place. A new elective at DMS focuses on preventing an injury that many doctors suffer from in mid-career: a loss of their sense of self and of a feeling of purpose in the practice of medicine.

Called "The Healer's Art," and sponsored by Senior Advising Dean Joseph O'Donnell, M.D., the elective draws on the work of Rachel Naomi Remen, the author of *Kitchen Table Wisdom* and other books, the director of the Institute for the Study of Health and Illness (ISHI), and a member of the faculty at the University of California at San Francisco.

The course was offered at DMS in the spring of 2002 and will be repeated in the 2003 winter term. "We wanted to 'steal' from ISHI what they were doing," O'Donnell says. Dartmouth is in good company in doing so; in its "Best Graduate Schools" issue, *U.S. News & World Report* featured schools with programs like "The Healer's Art" that are trying to address the fundamental emotional issues of becoming, and being, a doctor.

The loss of the sense of why they chose medicine as a career usually besets seasoned practitioners, O'Donnell says, but the symptoms can appear as early as the first few semesters of medical school. DMS's course last spring

In this section, we highlight visual and textual tidbits from past issues of the magazine. These messages from yesteryear remind us about how fast some things change, as well as about some timeless truths (occasionally unfortunate ones).

**From the Fall 1977 issue**

"We are in the Age of Malpractice," opined the late Donald Wilson, M.D., then an assistant professor of neurosurgery. "Never have so many doctors been sued by so many patients for so much money. And they are collecting."

"The real causes for the malpractice epidemic go deeper than the superficial charges of bad practice," went on Wilson. "They spring from the delusion that medicine is a business." It used to



**Don Wilson: "Trust was the glue"**

be, he noted, that "a patient trusted a doctor. . . . Trust was the invisible glue that bound them together."

But "somewhere along the line, and not so long ago, the glue dried up. A gap developed between doctor and patient, which the lawyer filled.

"When we in this country have finally faced our delusion and know that a standard care of illness has become a right

rather than a business deal, then," Wilson concluded, "patients, no longer consumers, will be gently shown that health is a quality of being for which they must share responsibility with their doctors, in an atmosphere of mutual trust."

The alumni columns in the same issue also touched on that era's malpractice crisis. Bruce Chandler, M.D., a 1974 DMS graduate, "was described as a 'pediatrician in limbo' in an article in the *Machias, Maine, newspaper*. It seems that he had just completed a residency in pediatrics at the Maine Medical Center and was being transferred by the Public Health Service to practice at the Lubec [Maine] Regional Medical Center. While he was en route to Lubec, the center closed, reportedly due to its inability to afford malpractice insurance."

Sadly, medicine is again (or is it still?) facing a medical malpractice crisis. Noted an August 25 article in the *New York Times*, "Around the country this summer, at least half a dozen hospitals have closed obstetric wards, others have curtailed trauma services, and a string of rural clinics have been temporarily shuttered as a result of soaring costs for medical malpractice insurance." Between 1995 and 2000, the average malpractice jury award rose more than 70%. And in the last year alone, malpractice premiums have doubled and tripled in some areas.

brought together 11 faculty members and 44 students—drawn from all four years—in what O'Donnell calls a "discovery model that encourages honest and mutually respectful sharing of experience, beliefs, and personal truths."

**Topics:** Various topics are addressed in small groups, each of which has a faculty leader. The topics range from "sharing grief and honoring loss" to "allowing awe in medicine" and "caring for the soul."

"We ask the faculty members to talk about why they love medicine," O'Donnell says. The reasons are varied and often surprising. "Students and faculty alike have never heard it before." And talking about the grief and loss they have experienced in the course of becoming and being doctors helps both the faculty and students understand that loss is a part of life," O'Donnell adds. Sometimes their recollections are emotionally overpowering. "It can be about a 12,000-hankie performance," he says.

The demand for the elective, and associated continuing medical education courses, has been surprisingly high, O'Donnell notes, mirroring the experience at ISHI, which can accept only 20 to 25% of those who want to attend its programs.

Maybe a dose of preventive medicine—teaching students to deal with the emotional losses and sorrows of practice and to find joy in what they do—will help reduce the need for such programs in the future for those learning medicine today.

MEGAN McANDREW COOPER

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

**Peter Silberfarb**, M.D., a professor and the chair of psychiatry, has been appointed a member of the American Cancer Society's Scientific Council for Extramural Grants. (Silberfarb is about to step down as the psychiatry department's chair after 26 years in the position; see page 12 for news about his newly named successor.)



**Daniel Levin**, M.D., a professor of pediatrics, received the Distinguished Career Award from the American Academy of Pediatrics' Section on Critical Care.

**Eugene Nelson**, D.Sc., a professor of community and family medicine, was recently named to a panel of judges by the Institute for Healthcare Improvement as part of a program to recognize quality health care and healthcare safety.

**James Pilliod**, M.D., an adjunct assistant professor of pediatrics, received a Special Achievement Award from the American Academy of Pediatrics for his commitment to improving children's rights to health care.

Three DMS faculty members were recently elected to positions in the New Hampshire Pediatric Society. **Charles Cappetta**, M.D., an adjunct assistant professor of pediatrics at Dartmouth-Hitchcock Nashua, was elected president; **Lawrence Kaplan**,

M.D., an associate professor of pediatrics, was elected first vice president; and **Christine Rosenwasser**, M.D., an adjunct assistant professor of pediatrics at Dartmouth-Hitchcock Manchester, was elected treasurer.

The Pediatric Society also presented **Sol Rockenmacher**, M.D., an associate professor of pediatrics and the society's outgoing president, with its Pediatrician of the Year Award; **Gilbert Fuld**, M.D., an adjunct assistant professor of pediatrics, with the Franklin Norwood Rogers Award for his contributions to children's health care; and **William Boyle**, M.D., a professor of pediatrics and of community and family medicine with the Public Servant of the Year Award.

DHMC has become the headquarters for the Alzheimer's Association of Vermont and New Hampshire, which was formed when two separate state chapters merged on July 1. **Robert Santulli**, M.D., an assistant professor of psychiatry and former president of the New Hampshire chapter, was elected president of the merged, two-state organization.



**Adam Keller**, M.P.H., associate dean and chief operating officer of DMS, was appointed acting treasurer and vice president for finance and administration of Dartmouth College. Keller will continue to serve in his DMS posts, which he has held since 1995, while overseeing the operations and management of the

College's fiscal vice presidency.

**Dorothy Mullaney**, A.R.N.P., a nurse practitioner in neonatology, was named Nurse Practitioner of the Year by the New Hampshire Nurse Practitioner Association.

**Li Wang**, a graduate student in biochemistry, won the Norton B. Gilula Award of the American Society of Cell Biology. She was selected from more than 1,000 applicants for the student travel award, which is funded by Rockefeller University Press, to attend the society's annual meeting in San Francisco.

In the 2002 *U.S. News & World Report* "America's Best Hospitals" issue, Dartmouth-Hitchcock's **Norris Cotton Cancer Center** was listed as one of the 50 best

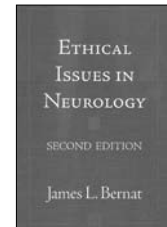


cancer treatment and research centers in the country. The magazine examined over 6,000 hospitals in all regions of the country and compared them based on several factors, including reputation, number of procedures performed, mortality rates, and level of technology available. Norris Cotton was ranked 39th in the cancer category.

**Michael Gazzaniga**, Ph.D., a professor of psychological and brain sciences and the director of Dartmouth's Center for Cognitive Neuroscience, has been appointed dean of the Dartmouth faculty of arts and sciences. He will oversee the humanities, science, social science, and interdisciplinary programs as well as graduate studies at the College.

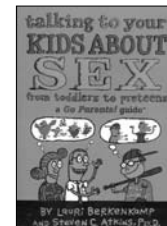
**New on the bookshelf:  
Recent releases by  
DMS faculty authors**

*Ethical Issues in Neurology*. By James Bernat, M.D., a professor of medicine (neurology) at DMS; Butterworth-Heinemann; 2002 (second edition). This



book offers a comprehensive account of the ethical problems that neurosurgeons and neurologists may face in their practices. It discusses life-sustaining treatments as well as issues involved in euthanasia. The book also analyzes questions that can arise in treating various disorders of the nervous system, ranging from paralysis and dementia to mental retardation.

*Talking to Your Kids about Sex from Toddlers to Preteens*. By Lauri Berkenkamp and Steven Atkins, Psy.D., an instructor of psychiatry at DMS; Nomad Press; 2002. This practical manual is aimed at helping parents figure



out how to begin, and continue, talking with their children about sex. It emphasizes parents' role in the process and contains numerous developmentally grounded examples and recommendations, as well as advice on how to handle the abundance of sexually explicit messages in the media today. ■