

DMS's David Nierenberg led a thorough revamping of the orientation program for new M.D. students, to give them a big-picture view of medicine before they delve into its scientific underpinnings.



A VIEW of the FOREST

Text by Amos Esty
Photographs by Jon Gilbert Fox

At 8:00 a.m. on Monday, August 9, the members of the Dartmouth M.D. Class of 2014 filed into Kellogg Auditorium to begin their careers in medicine. Three hours later, they began work on their first patient case.

Their patient, "Mr. Barns," had experienced few health problems until about a year before, when he developed a bad cough and a fever. As a longtime smoker, Barns was accustomed to chronic coughing, but it was getting worse. After he had a chest x-ray, his primary-care doctor diagnosed pneumonia and prescribed an antibiotic, which alleviated the symptoms.

But recently, Barns had found himself occasionally coughing up blood. He'd lost weight without trying to. And even minimal physical exertion was leaving him short of breath. It was at this point that his case was brought to the attention of the 90 doctors-to-be starting their medical education. During the first week of medical school—a time usually dedicated to administrative details and social ice-breakers—the students pored over the details of Barns's medical history and treatment.

The revision of DMS's orientation program was led by David Nierenberg, M.D., DMS's senior associate dean for medical education. He says that tak-

If the minutiae of science and anatomy are the "trees" of medicine, then the "forest" is an understanding of how the parts of the medical system fit together, of the change in medical practice from a solo pursuit to a team enterprise, of the rising cost of care. And more. DMS now gives students that big-picture view starting on their first day.

Amos Esty is the managing editor of DARTMOUTH MEDICINE.

Mr. Barns is not real, but his case is representative of the patients that the new medical students will see countless times over. “Most of the students come here because they’re interested in taking care of people, and so by using a case it allows them to immediately engage in medicine,” says Ann Davis, M.D., the chief of medical student services.

Small-group sessions were a hallmark of orientation week and are also a key feature of one of the first-year courses, *On Doctoring*, pictured here.



ing time for socializing and administrative details—such as having ID photos taken and learning how to get around campus—is important, but he wanted to add something to the first week that would give students an overview of what medicine is all about before they became buried under textbooks. “I wanted to throw them into medicine,” he says. “I wanted to show them the forest before they began focusing on a few trees.”

As medicine has become more complex, the skills students need to master by the time they collect their M.D. have changed. Nierenberg says that medical schools have always been good at teaching anatomy, biochemistry, and the other basic sciences associated with medicine. What has been more difficult is figuring out how to include in the curriculum less tangible aspects of medicine, such as communicating with patients or improving the way care is delivered. And he believes that those skills will be essential to today’s students, who he thinks will inevitably see some significant changes in the way health care works in the United States.

“I really wanted them to start learning that the health-care system needs to change,” Nierenberg says. “There are too many mistakes. It’s disorganized. It’s not patient-centered.”

Nierenberg is not alone in his assessment of the deficiencies of traditional medical education. For

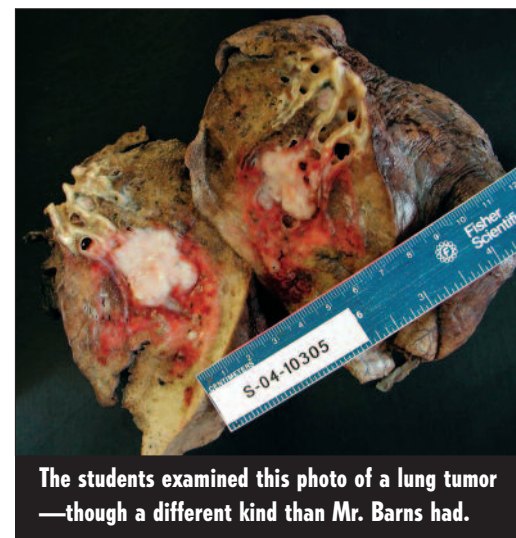
example, Donald Berwick, M.D., the director of the federal government’s Centers for Medicare and Medicaid, has written that, historically, physicians maintained fairly independent practices. But today, he has argued, physicians have to be able to work successfully with other physicians and with caregivers from other fields—what he calls the “inescapable interdependence” of the way medicine is now practiced.

“Physicians are essential to progress in improving health-care systems,” Berwick wrote recently. “If they do not understand—indeed, if they do not thrive in—the world of interaction and interdependency in which they work now, and if they, unscientifically, regard their own deeds as sufficient for excellence, then they can confound systemic excellence and impede needed system changes.”

So, as one response to the changing imperatives of medical education, this year’s class of first-year students received a crash course in what it means to be a physician. At the heart of the new program was the focus on a patient case.

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The students examined this photo of a lung tumor—though a different kind than Mr. Barns had.

their careers. Three times during the first week, the students divided into groups of 10 and met with a faculty preceptor to go over Barns’s case. Between these sessions, DMS faculty members and students gave a number of presentations on factors related to both the treatment of Barns specifically and the practice of medicine generally.

At the first small-group session on Monday morning, the students heard all the relevant details of Barns’s personal history. He’d started smoking as a teenager, a habit that became more entrenched after Barns joined the Navy at age 18. After leaving the military, he went to college, eventually becoming an accountant. Now 64, he has lived in Hanover for years, is married, and has three grown children and two grandchildren.

The students talked about the possible causes of his symptoms—a process known as differential diagnosis. Nierenberg, the leader of one of the groups, asked his students what risk factors might be present in Barns’s history. The students quickly pointed to his smoking, but they also considered his time in the Navy. After some discussion, they wondered if Barns might have been exposed on ships to asbestos, a material widely used in the past as an insulator but now known to be a carcinogen.

Then the students were told the results of more diagnostic tests—an x-ray and a computerized tomography (CT) scan of Barns’s chest. The images revealed growths that appeared to be tumors in Barns’s right lung. A bronchoscopy and a biopsy confirmed the presence of non-small cell lung cancer, the most common type of lung cancer. Nierenberg guided the students through the biopsy result, asking them to report what they saw in the images. He ended up being impressed. “I was amazed at what they already knew,” he says.

General internist Greg Ogrinc, M.D., an associate professor of community and family medicine, led another of the small groups. He had worried that the case would be too difficult for first-year students. But he found that they asked questions about what they didn’t know and pieced together what they did know and so were able to make rapid progress. “I was pleasantly surprised at the depth of the discussion,” he says.

Joseph O’Donnell, M.D., DMS’s senior advising dean, was likewise impressed by the new learners. “They brought their life experiences to it,” he says. “They taught each other.”

And first-year student Elizabeth Barton enjoyed the chance to explore a specific case early on. “In working through the case, our small group got really close, and I certainly think I learned a lot from the members of my group,” she says.

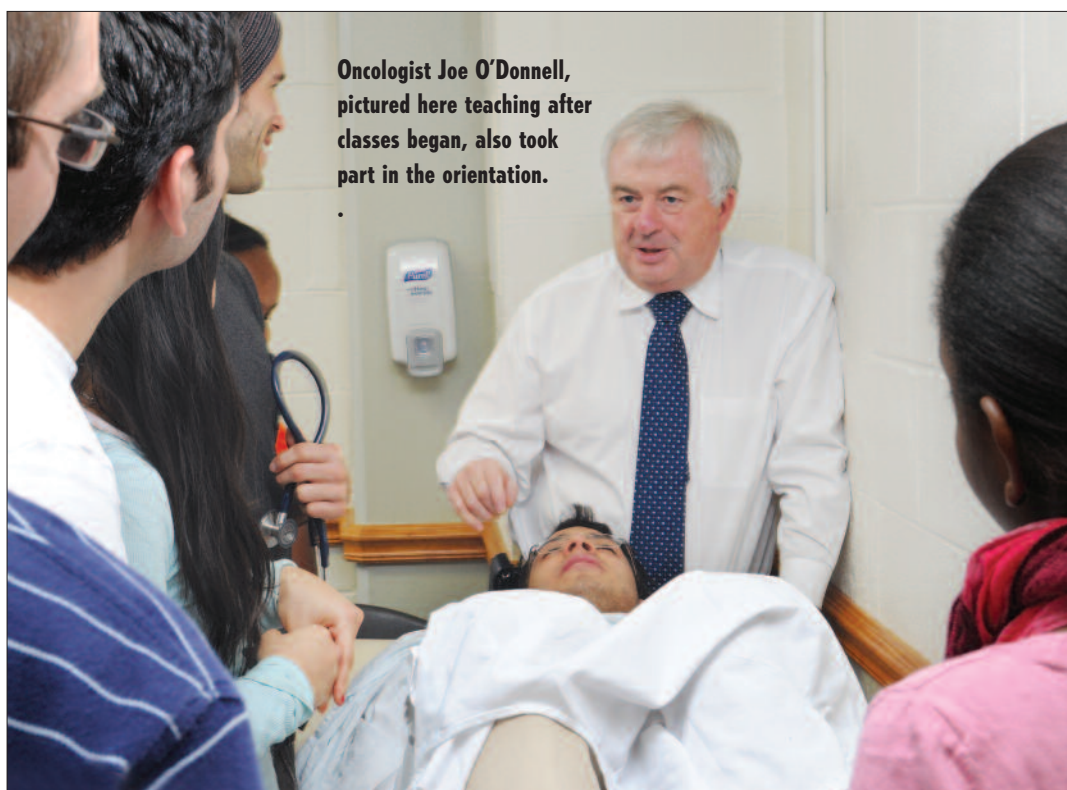
The small-group sessions ended with a discussion of how to stage a tumor—the process of figuring out how advanced a given cancer is. Later that day, the students heard from a number of specialists on the DMS faculty about possible next steps in Barns’s treatment. Physicians who treat cancer often take part in cross-disciplinary discussions called tumor boards, which bring together specialists from a number of different disciplines. This group included a thoracic oncologist, a radiation oncologist, a pathologist, a pulmonologist, and a surgeon. Each spoke passionately about his or her field of choice before they collectively launched into a discussion of the optimal way to treat Barns’s cancer.

After going over the various options—whether Barns was a good candidate for surgery to remove the tumor and whether he should be treated with radiation, chemotherapy, or both after the surgery—they settled on a recommended course of action. At the same time, they introduced the students to some of the uncertainties of their jobs. Thoracic oncologist Konstantin Dragnev, M.D., noted that even if surgery is successful in removing all of the visible tumor, it’s possible that microscopic deposits of cancerous cells may remain that could cause the cancer to return. That’s where chemotherapy can be helpful. But, he added, chemotherapy can have severe side effects, so it’s important to involve patients in the process of deciding whether dealing with the side effects is worth the potential benefits in each individual case.

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Among Nierenberg’s goals for the tumor-board session were to show students how many physicians it takes to treat a patient and to introduce them to some of the career options they will have. And, he says, he wanted the students “to see that whatever they choose, they have to learn how to work with all the other doctors and nurses.”

The students watched as O'Donnell, an oncologist, talked with a long-time patient of his who—like Barns—has lung cancer. "At its core, medicine is about what happens in a room with a doctor and a patient," O'Donnell told the students before starting the interview. He obviously knew his patient well.



Oncologist Joe O'Donnell, pictured here teaching after classes began, also took part in the orientation.

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The students responded well to the lessons. "I loved the tumor board—it was fascinating," says first-year David Goldenberg. Another student, Ariel Hubert, says that the presentation opened her eyes. "I was a little surprised at the complexity of medicine, especially for caring for just a single patient," she says.

On Tuesday morning, the students learned about cancer from the point of view of the patient. They watched as O'Donnell, an oncologist at the Dartmouth-affiliated VA Medical Center in White River Junction, Vt., talked with a long-time patient of his who—like Barns—has lung cancer.

"At its core, medicine is about what happens in a room with a doctor and a patient," O'Donnell told the students before starting the patient interview. Over the course of an hour or so, O'Donnell asked the patient about his medical and personal history, gathering the kinds of details he would need to treat a patient with lung cancer.

O'Donnell also brought up other issues that could be a factor in medical decision-making, such as the fact that the patient's wife had died just before he started treatment. O'Donnell obviously knew his patient well. Finally, after the students had a chance to ask the patient a few questions of

their own, O'Donnell ended the interview. This is your first patient, O'Donnell told the students. "I want you to remember him."

"I definitely feel like I won't forget that interaction," says first-year Elizabeth Barton. "Taking the case from one we had been reading on paper and making it come alive with a real patient was really moving."

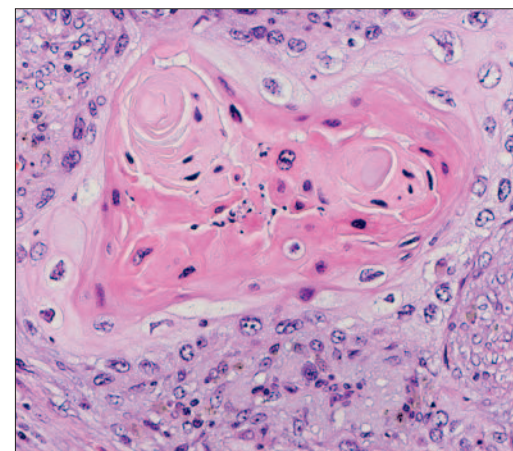
"It was probably the most real example you could get," Hubert agrees.

Other sessions throughout the week reinforced the idea that it takes a lot to care for each individual patient. Ethan Dmitrovsky, M.D., talked to the students about the importance of research, using as an example a treatment he has developed for lung cancer that has gone through successful Phase I and II clinical trials.

"Clinical trials are long, hard, and expensive," Dmitrovsky told the students. But, he said, with about 160,000 Americans dying of lung cancer in 2009, more than 200,000 expected to receive a diagnosis of lung cancer in 2010, and an overall five-year survival rate of just 16% for non-small cell carcinoma, it is important to continue working on better treatments.

The orientation program also included some sessions not specifically about Mr. Barns but, like the discussions about his case, aimed at giving students a broad overview of the delivery of medical care.

Several faculty members talked about the struc-



Students also viewed this biopsy specimen of non-small cell lung cancer—just what Mr. Barns had.

ture of the U.S. health-care system and some of the problems with it. Mark Splaine, M.D., director of the Center for Leadership and Improvement at the Dartmouth Institute for Health Policy and Clinical Practice, talked about the rising cost of health care. He pointed out that health-care spending now accounts for over 17% of the nation's gross domestic product.

And Elliott Fisher, M.D., the primary investigator of the *Dartmouth Atlas of Health Care*, discussed the research he and others have carried out on geographic variations in the delivery of health care, explaining how these variations both affect the care patients receive and lead to wasteful spending.

Ogrinc led a session focused on looking at health care as a system, from an individual doctor's practice to the nation's health care as a whole. "As medical students and as future physicians they have a responsibility for the system that they're part of," Ogrinc says. Wherever they work, he wants them to be able to recognize the components of that system and to think about how to improve those components. "You take care of the patient in front of you as an individual, and you pay attention to the system you and the patient are part of," he says.

Other talks focused on individual interactions with patients. Third-year medical student Laura Bozzuto discussed informed decision-making, emphasizing the importance of talking to patients about their own goals, values, and priorities and noting that their concerns are often different from those of doctors.

Bozzuto thinks it makes sense to introduce these issues to students in the early days of medical school. "Shared decision-making is one of the things that Dartmouth Medical School and Dartmouth-Hitchcock are known for, so it was

important for [students] to be exposed to that early on," she says. "It's good to spark some interest early on, catch them before they're totally overwhelmed with medical school."

Kathryn Kirkland, M.D., an infectious disease expert, spoke on hospital-acquired infections, telling the students that "the most dangerous weapons in medical centers today" are the hands of doctors. "Everything we do to help patients comes with the possibility of doing harm," she said. She then went over the ways to prevent infections, the most important being hand-washing. "The last thing you touch before you touch a patient should be something that cleans your hands," she said.

These and other presentations gave the students a lot to talk about in their small-group sessions. In his group, Nierenberg walked the students through Barns's treatment options. A discussion of shared decision-making led to questions about cancer screening, including recent controversies that have played out in the media regarding the use of mammograms to screen for breast cancer and of the prostate-specific antigen (PSA) test to look for signs of prostate cancer.

Then the discussion turned back to Mr. Barns. The surgery itself went well, Nierenberg told the students, but a problem arose afterward: he came down with an infection from a catheter. "It turns out that the most common way bugs are spread is pretty low-tech: on your hands," he said. "It's basically laziness of a doctor or medical student."

At Friday's small-group session, the last one of the week, the students reviewed the case one more time, talking about how to discuss treatment options with a patient—in this case, how to go over with Barns the risks and benefits of radiation, chemotherapy, both, or neither. The case ended well for Barns, once he recovered from his hospital-acquired infection.

The case seems to have ended well for the students, too. "It's nice to have this introduction to a real patient case before jumping into classes, which can be kind of narrow," says first-year Jane Rhyu. Her classmate Ryan Guinness agreed. "It makes us feel like we're actually making a contribution," he says.

A few days after finishing their work on Mr. Barns's case, the first-year students began classes, immersing themselves in the minutiae of basic science that make up much of the first-year curriculum. But Nierenberg hopes that the case will stick with them, inspiring them when they're struggling to memorize arcane medical terms.

After all, he points out, "patients are the best motivators for learning." ■

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