

DARTMOUTH MEDICINE

A Magazine for Alumni and Friends of Dartmouth Medical School and Dartmouth-Hitchcock Medical Center

Fall 2005

**On call:
24 hours
in the life
of a resident**



24 HOURS ON CALL

Hilary Ryder is a second-year resident in internal medicine at Dartmouth-Hitchcock. That means, on most rotations, spending every fourth day on call. And *that* means at least 24 hours of nearly nonstop activity.

DARTMOUTH MEDICINE shadowed Ryder for a day to show what life is like for a resident.

**Photographs by Patrick J. Saine
Text by Laura Stephenson Carter**

Medical education is far from over when students complete their M.D.'s. They spend the next several years—the length of time depending on the specialty—as residents at teaching hospitals or academic medical centers. Residents are both learners and providers of care, training and working under the supervision of experienced physicians. As their residency progresses, the new doctors become more experienced themselves and require less direct supervision. There are about 24,000 residency positions in some 3,800 programs across the U.S.; DHMC has 35 programs with a total of 349 residents this year.

It used to be that residents worked 100 hours a week or more. They still work long hours, but since 2003 residents nationwide have been limited to 80 hours a week—with one day out of seven free, a minimum of 10 hours off between shifts, and a maximum of six hours post-call to complete and hand off their work. Residents can be on call no more often than every three days; during on-call stints, they sleep (when they can) in the hospital so that they're available at any hour of the day or night when emergencies arise.

Dr. Hilary Ryder, the resident featured in this photo-essay, received her M.D. from Yale in 2004. She comes from a long line of physicians, including a great-great-grandfather and great-grandfather; a great-uncle; and her father, an epidemiologist who specializes in tropical medicine. Ryder considers her hometown to be Wellesley, Mass., but her father's work meant that she grew up all over the world—in places like Panama, Great Britain, Gambia, and the Democratic Republic of the Congo. DHMC was her first choice for residency, and she plans eventually to specialize in hospitalist medicine.

Ryder arrived at Dartmouth in July 2004 as a first-year resident, or intern, in internal medicine. She thrived on the hectic pace last year, doing a dozen different rotations and gaining confidence and experience. Residents typically do four-week rotations in various areas within their specialty. Ryder finished her internship on June 25, 2005; got married; honeymooned in Greece; then, without missing a beat, returned to DHMC in July as a second-year resident. Her first rotation was at the VA Medical Center in White River Junction, Vt. On August 1, she started her second rotation, on an inpatient unit at DHMC. Several teams of physicians provide care to hospitalized patients, and each team is led by a second-year resident. Ryder heads the "red team," which includes Matthew Laquer, a third-year DMS student; Dr. Sharlene D'Souza, an intern who just received her medical degree from the University of Oklahoma; pharmacy practice resident Lindsay Brooks, who just earned her Pharm.D.; and Dr. Brooke Herndon, the attending physician who supervises the team.

One of Ryder's 24-hour on-call stints on this rotation began at 7:30 on a Monday morning in August. Photographer Patrick Saine shadowed her the entire time, shooting 959 images during the period. Whether Ryder was examining patients, attending meetings, interacting with other caregivers, responding to medical emergencies, teaching the student and the intern on her team, or catching a quick bite to eat, Saine was there as well.

Photojournalist P.J. Saine's work has appeared many times in these pages—most recently in the Spring 2005 "Art of Medicine" section; he has been the manager of ophthalmic photography at DHMC since 1997. Laura Carter, the magazine's associate editor, accompanied Saine for 12 of the 24 hours represented here. In the photo captions, the times are exactly as recorded by Saine's digital camera and identifications are from left to right. Italicized quotations are things said at the time the photo was shot; other quotations were explanations Ryder made afterward. Pictures of patients were shot only with permission; identifying details about other patients have been changed.



MON 7:46AM Ryder starts her day at morning report. About a dozen people are in attendance, including the chair of medicine. Dr. Matt Walton, chief resident, runs the meeting, handing out a sheet that describes two complex cases. The other residents discuss the cases and ask questions. Ryder wonders if one patient's symptoms had increased after he was given a certain medication.



MON 8:36AM Morning report is over. As the meeting breaks up, Ryder chats briefly with two fellow residents, Dr. Kevin Fleming and Dr. Josh Steinberg.



MON 9:05AM The members of the "red team"—pharmacy resident Lindsay Brooks, Ryder, medical student Matt Laquer, intern Sharlene D'Souza, and attending Brooke Herndon—stop at a nursing station to confer during rounds.



MON 9:45AM Ryder and D'Souza examine a patient. The intern "pre-rounds" in the early morning to gather pertinent data on the unit's patients—such as changes since the previous day's rounds in their physical condition, medications, or lab results. "She reports on everything that's happened in the last 24 hours," Ryder explains. "Then we all go in and examine the patient together."



MON 10:29AM Laquer and Brooks pay close attention as Ryder talks with another patient and his wife. "We walk in, we talk to the patient, and we examine him," Ryder says. Morning rounds also include reviewing that day's treatment plan with the patient and answering any questions the patient may have. As the leader of the team, the second-year resident keeps the "big picture" in mind, delegates responsibility, and empowers the intern and medical student to do their jobs.





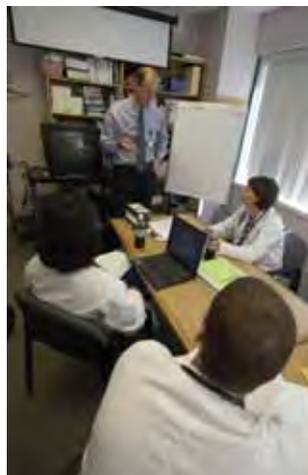
MON 10:45AM Residents are almost constantly on the move, so they take advantage of every chance encounter as they go about their work. "When we run into people who we share [patients with] . . . we just stop and talk about them," says Ryder. Here, at the nursing station in the Intermediate Cardiac Care Unit, she's paused to confer with Dr. Campbell Levy, a gastroenterology fellow, about one of her patients who is on another floor. Laquer and Herndon are listening in.



MON 11:06AM Ryder, D'Souza, and Brooks, on a service elevator, are on their way to the cafeteria "for the first round of caffeine," says Ryder.

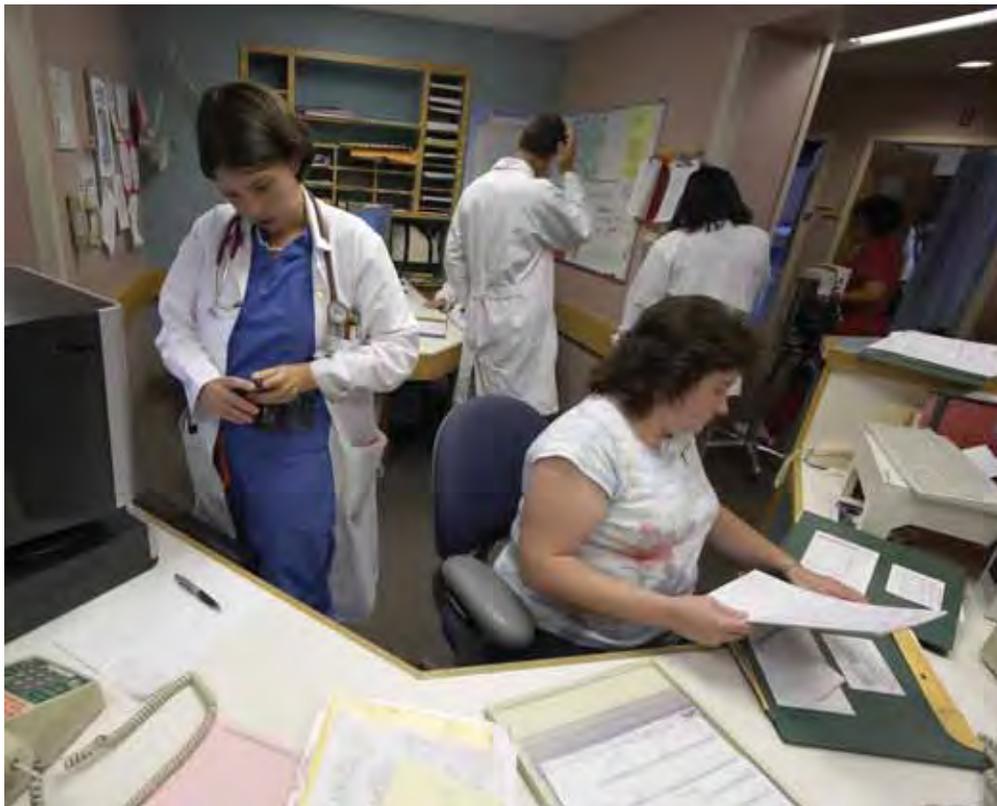
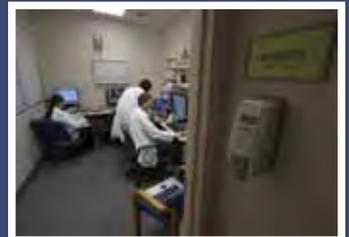
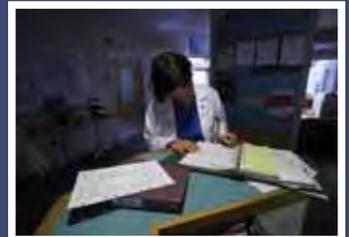
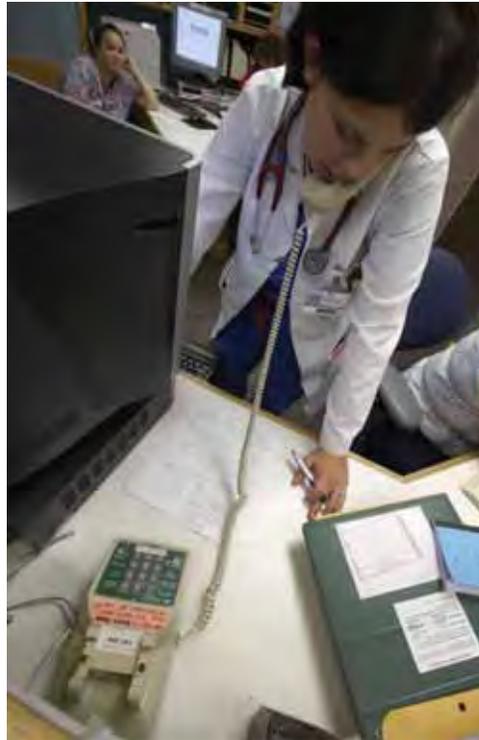


MON 11:07AM Brooks, D'Souza, and Ryder pay for their purchases. This is actually Ryder's second round of caffeine—she brought a travel mug of tea from home and drank it at morning report. This time, she's chosen a bottle of cola.



MON 11:15AM The red team meets daily from 11:00 a.m. to noon for teaching rounds—often lectures on topics relevant to patients the team is caring for, but sometimes visits to a patient's bedside to learn the fine points of physical diagnosis or to the pathology or autopsy labs. These sessions are usually led by the team's teaching attending—Dr. Mary Margaret Andrews, an infectious disease specialist—but she's away today, so she and Ryder had asked Dr. Worth Parker (standing), a pulmonologist, to present instead. He's speaking about cystic fibrosis (CF), a genetic disorder involving a buildup of mucus in the lungs, the ducts of the pancreas, and other secretory glands. "We'd had a rash of CF patients," Ryder says, "so I wanted the med student and the intern to learn a little about why we manage CF patients the way we do."

MON 12:06 PM Ryder has just been paged. Interns usually get paged by nurses. But "on-call residents are either paged by their intern or by the ED [Emergency Department], their attending, or occasionally nurses," Ryder explains. Or, she adds, "M.D.'s will page the on-call resident with new admissions." Ryder returns the page, checking some data on the computer as she is talking. She makes several other calls while she's at it. "Just wanted to give you a heads-up on a couple of things," she says to a discharge coordinator. "Mr. A— is ready to be discharged today, back to Genesis. We are hoping to get Mr. B— out tomorrow."



MON 12:21 PM Ryder has been paged again and is reading the callback number. Laquer and D'Souza are checking information on the white board in the background, as unit secretary Lynn Ruggles is processing paperwork. After Ryder returns the page, she will grab the lunch she has brought from home and head to noon conference, which is already in progress.



MON 1:01PM At noon conference, Ryder asks questions and listens to advice offered by colleagues on how to handle patients who show up late for appointments. Today's noon conference is general internal medicine's quarterly clinic team meeting with the outpatient nurses and secretaries, who give "tips on being efficient in the outpatient workplace—that kind of stuff," Ryder says. Medical topics—like "acute abdominal pain" or "fluids and electrolytes"—are presented other days. On Wednesdays, Ryder goes to the Department of Medicine's weekly morbidity and mortality conference.



MON 2:04PM Ryder reviews a patient's record with nurse Beryl Samuels during "quiet hours" on the unit. From 2:00 to 4:00 p.m., "lights are dimmed and you're not supposed to talk in loud voices, so patients can heal," says Ryder.

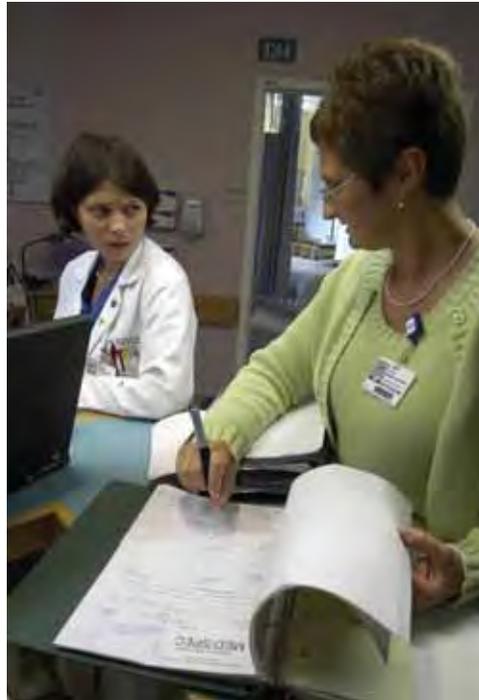


MON 2:08PM D'Souza, Ryder, and Laquer are in the residents' team room looking at a CT scan of a patient's chest. Ryder is concerned because the scan shows a lot of fluid that isn't supposed to be there. "Do you want to go to radiology and have it read?" she asks Laquer. While awaiting his return, Ryder and D'Souza continue to write up patient notes, examine test results, and determine plans for patients whom they saw earlier in the day. At 2:20, Laquer returns with the news that the scan shows no clots, but that large bilateral pleural effusions—significant accumulation of fluid between the rib cage and the lungs, on both sides of the chest—are evident.



MON 2:14PM While waiting for Laquer to come back with the radiology report, Ryder munches on a piece of fruit as she reviews medications lists with pharmacy resident Brooks. The team room is designated work space for residents and medical students—a place where they can hold meetings, make phone calls, discuss patients, look up medical information on the computer, type patient notes and orders, and update electronic patient records—as well as eat snacks and store their belongings. Ryder's group shares this particular room with the green team, which works on the same unit.

MON 2:30PM Keeping their voices low, since quiet hours are still in force, Ryder and care management nurse Lory Grimes quietly discuss a patient. The nurses, social workers, and other professionals in DHMC's Office of Care Management work closely with physicians and other clinicians to arrange for follow-up care after patients are discharged from the hospital, help patients and families cope with the emotional impact of illness, advocate for the needs of patients and families, and negotiate on patients' behalf with insurance providers and managed-care companies.



MON 3:19PM "The patient I'm a little concerned about is Mr. C—," Ryder has just explained to attending physician Brooke Herndon, who's been on the faculty since 2001. "I'm not quite sure what's going on." Attending physicians supervise the work of residents and are authorized to bill for the hospital's services. "The attending [goes on] rounds with residents and later in the day touches base with the team about patients as scans, etc., are coming back," explains Ryder.





MON 3:47PM Senior resident Dr. Lisa Pastel, Ryder, second-year resident Dr. Martin Palmeri, D'Souza, and Laquer race to a code-blue emergency—an unconscious person somewhere in the DHMC complex. Because Ryder is on call, she carries the code-blue pager and must respond, with her team, whenever such an emergency is declared. Pastel and Palmeri are also on the adult CPR team, with respiratory-care providers and others. It turns out that an elderly outpatient had gone into cardiac arrest during a routine diagnostic procedure.



MON 3:54PM Ryder directs the determined efforts to revive the patient. The code team administers CPR and medications, as well as shocks from a defibrillator.

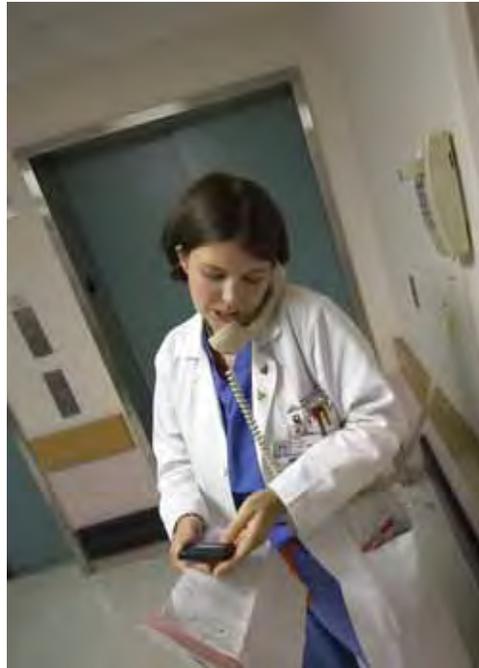


MON 4:16PM The patient hasn't responded, so a nurse has gotten the woman's next-of-kin on the phone; then Ryder gets on the line. "I'm the on-call physician," she tells the patient's son. "I'm calling about your mother." Ryder explains what has happened and says, gently, "The chances of her coming back after almost half an hour are very unlikely." Ryder then hands the phone back to the nurse and returns to the patient. "Stop compressions. Charge. Are we clear? Let's shock." Soon the woman's heart goes into ventricular fibrillation, a series of rapid, irregular contractions, and eventually it stops beating completely. "Does anyone feel uncomfortable stopping resuscitation?" Ryder asks the team. "Stop compressions," she says when there's no dissent. The room falls silent. Ryder then returns to the phone and breaks the news to the son that his mother has died. "I'm so sorry to be talking to you like this. I wish we weren't in this circumstance."



MON 4:35PM Pastel and Ryder are completing paperwork as Palmeri looks on. Pastel "was the charter" during the code, Ryder explains. "She charted when medications were given [and] all the other procedures when they were done"—such as when compressions started and stopped, when the ECHO machine was run, when shocks were administered, and so on. "At the end, all the residents have to sign off," she adds. But handling a code entails more than directing the medical team and processing the paperwork. Ryder, Pastel, and a few other members of the code blue team also stood quietly beside the patient during a brief memorial service conducted by a DHMC chaplain.

MON 5:25PM Ryder returns to the routine of caring for her own patients once the code is over. On her way to the Emergency Department (ED) to admit two new patients, she stops outside a service elevator to answer a page. Telephones are strategically placed throughout the Medical Center so caregivers can respond to pages from almost anywhere. Ryder will stop a few more times on her way to the ED—to answer pages, to check on a patient, and to sign the death certificate for the patient who died in the code-blue emergency. "You gotta be efficient," she says as she continues on her way toward the ED.



MON 5:29PM Ryder has almost reached the ED when she spies one of her patients waiting on a gurney in a hallway. "Hi," she says as she recognizes him—calling him by name and asking how he's doing. He seems glad to see her. He had been brought down from the inpatient unit for a CT scan, which has been taken, and now he's waiting for a member of the transportation staff to wheel him back up to his room. Transportation personnel, who used to be called orderlies, take patients all over the Medical Center—from inpatient rooms and clinic offices to the x-ray department and other areas.



MON 5:40PM Ryder (seated) and emergency department nurse Mary Trono examine one of the patients who is being admitted to the hospital this evening through the ED. *"I'll be your doctor tonight,"* Ryder tells the patient. As part of the admissions process, Ryder will ask the patient about her medical history and current condition and do a physical exam.



MON 6:09PM By now several new patients have been admitted to Ryder's unit, and she's at a computer in the ED writing their admission notes. In addition to the medical history and physical exam results, she includes the reasons the patients came to the hospital, their medications and drug allergies, and an assessment of their problems.

MON 5:46PM As Ryder examines the patient, she checks for lymphadenopathy—swollen lymph nodes, which are often associated with inflammation or infection. While she's conducting the physical exam, Ryder asks the patient a number of questions—such as *"Does it hurt when you lie flat?"* and *"Have you been short of breath?"* and *"Does it hurt when you pee?"*—to help her assess the patient's medical condition and come to a tentative diagnosis regarding her problem.



MON 7:36PM The red team got to the DHMC cafeteria for dinner just before it closed at 7:30 p.m. Laquer is now enjoying his meal while Ryder answers yet another page. *"I've gotten called about a few patients that we need to admit,"* she says. She does manage to eat between pages; despite the hectic pace of the day, she knows how important it is to find time to eat. She makes sure the people on her team stay well nourished, too.



MON 8:03PM After dinner, Ryder headed right back upstairs. She is now in the Post-Anesthesia Care Unit (PACU), writing up orders for a patient who is about to be transferred from the PACU to her unit on One East. "This is a patient who'd had a big heart attack," explains Ryder. "He'd been too surgically unstable to go to cardiac catheterization, so they had just stabilized him and I was taking care of him overnight to prepare him for the catheterization in the morning."



MON 9:15PM Ryder is talking with Matt Laquer, the medical student on her team, reviewing orders for the patients that he has been helping to care for. Ryder makes sure that her medical students and interns have a chance to work on interesting cases—meaning cases on which they are most likely to learn something. "I want you to see as much as possible," she told Laquer earlier in the day. The Department of Medicine recently recognized Ryder for her exemplary teaching skills by giving her an "Excellence in Teaching Award," sponsored by the national Arnold P. Gold Foundation. The award comes with a golden goose lapel pin that is visible on her white coat in several other photographs.





MON 9:52PM One of the team's patients has cystic fibrosis (CF). Ryder explains that CF patients "have very tenuous lung status, so [we] try and isolate them as much as possible." Staff follow rigorous CF infection-control guidelines to avoid spreading germs among patients, since the respiratory secretions of CF patients can contain drug-resistant pathogens. For example, caregivers always wear a surgical gown—like the one Ryder has on here—when they go into a CF patient's room. DHMC houses the New Hampshire Cystic Fibrosis Center, which is accredited by the Cystic Fibrosis Foundation. At DHMC's center, a multidisciplinary team of physicians, nurses, physical therapists, respiratory therapists, nutritionists, social workers, and psychologists provide comprehensive care for CF patients and their families.



MON 10:03PM Ryder has stopped in a hallway to comfort the patient who is being transferred to her unit from the PACU. "I wanted this patient to stay in ICU [intensive care unit]-level care," says Ryder. However, there are no ICU beds available right at the moment.

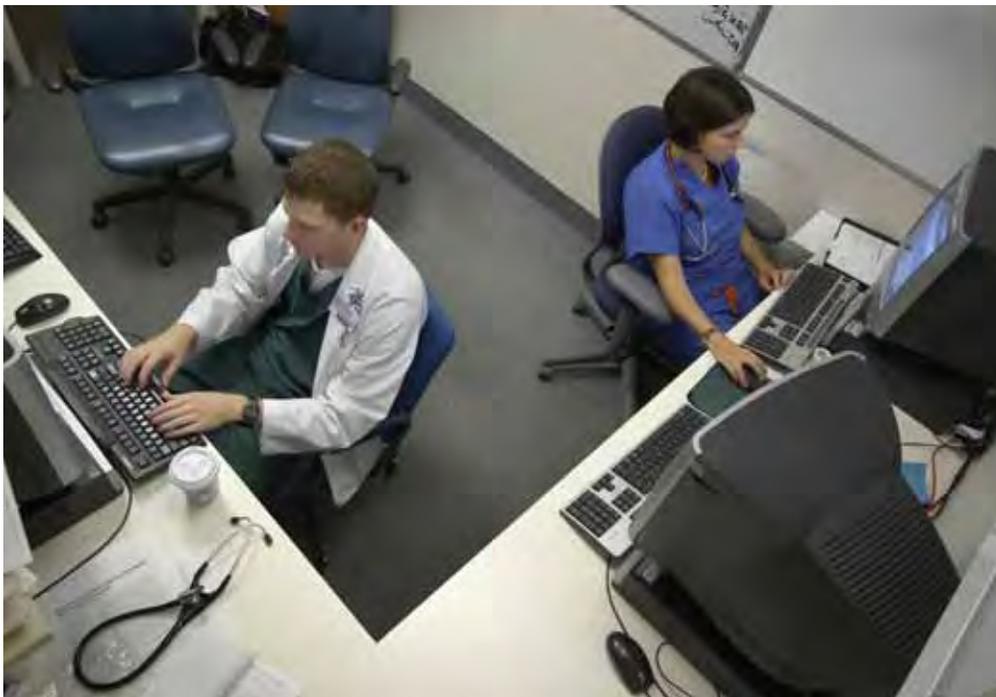


MON 10:25PM Ryder is reading an electrocardiogram for the patient from the PACU while she's talking on the phone with the hospital official who is tonight's designated administrative coordinator on site (ACOS). The ACOS, a nurse supervisor who sees that the hospital runs smoothly after hours, must authorize any nighttime patient transfers. Ryder is still trying to see when she can get the PACU patient into an ICU. A few hours later, she is able to have him moved to the Coronary Care Unit, an ICU for cardiac patients.



MON 11:52PM Fellow resident Martin Palmeri, who's also on call tonight, accompanies Ryder to the Medical Center's late-night deli. "There's always this debate around midnight," explains Ryder. "Do you get the caffeine? . . . Or do you stick it out [and] try not to get the caffeine in the hopes that you'll get to bed soon? I usually end up getting the caffeine."

TUE 1:19AM Back in the team room, Ryder looks up patient information and researches a few conditions on the computer. She is responsible for all the patients the team is caring for but delegates certain tasks—like ordering daily lab tests and filling out paperwork—to the intern. Ryder is also responsible for supervising work done by the medical student and the intern; teaching and providing feedback to both of them; reviewing their notes and orders; overseeing procedures they do; preparing and reviewing discharge summaries; and establishing effective relationships with her patients and their families, as well as with other physicians and caregivers.



TUE 2:11AM Laquer and Ryder are still hard at work, writing patient notes. Notes written by medical students don't count as the only daily progress notes for a patient; the intern must read, correct, and cosign the notes. At the end of each day, the resident sits down with the entire team to review what's been done and make a preliminary plan for the next day.



TUE 2:47AM Ryder is finally about to get a little sleep. On her way to bed, she stopped in the central telemetry unit to check some cardiac information on one of her patients. "The tele unit can give 24-hour data, including trends, and has the benefit of having the tele nurse let you know if there was anything specific that went on," she says. Satisfied that her patient is okay, she heads for her dorm-like call room, slips off her white coat (but keeps her scrubs on), and climbs into bed. She'll be paged if she's needed.





TUE 5:03AM Just over two hours later, the code-blue pager has summoned Ryder and her team to the Cardiac Care Unit. After reviving the patient, the team didn't leave right away, since "we thought the patient was going to re-code—which he did," says Ryder. They revived him again.



TUE 6:27AM Even the busiest health-care providers stop to enjoy a little socializing now and then. Here, night nurse Candace Colby-Collier is admiring Ryder's wedding photographs (she was married on June 25, the same day she finished her internship year), while Ryder writes up more patient orders.



TUE 6:46AM Laquer, D'Souza, and Ryder are conferring at the work table behind a nursing station when a nurse delivers some distressing news about one of their patients—he had become agitated and ripped the intravenous tubes out of his arm before anyone was able to stop him. Ryder heads right down to the patient's room and decides how to handle the situation. The team has already begun making rounds on their other patients. On most days, the intern pre-rounds by herself, before regular rounds, so that she can update the rest of the team on the patients' status. But on post-call days and on weekends, the team instead does "discovery rounds," visiting the patients together. "We try to gather data as efficiently as possible as a team," explains Ryder. She chats with each patient and checks their vital signs while D'Souza writes the progress notes. "We'd talk about the plan as she was typing it up. So then we'd all walk away with a plan in place."



TUE 7:46AM It's time for morning report again. Ryder nibbles on a scone and sips a cup of tea as she listens to the presentation and discussion. She also hands over the code-blue pager to the resident whose turn it is to be on call for the next 24 hours. After morning report ends, Ryder continues checking on her patients to be sure that she passes along any pertinent information to today's on-call team. She finally heads for home, after 30 hours in the hospital, around 1:00 p.m. ■