In training: Gerard Marciano (right) observes the bedside manner of Ronald Smith '04.

JOHN ABBOTT

If you're a physician, you'd have to complete another residency."

Benefits of the PA lifestyle were particularly clear for Thompson, who wanted enough time to practice medicine and write. "I made a conscious choice between becoming a PA and an MD," says Thompson, author of the Smartie Series, books that help kids understand medical issues. "The best part about being a PA is that I have more to do with the patients, but when I leave I'm gone. I'm not getting paged in the middle of the night to do a delivery."

Formalized physician assistant programs have proliferated since the first was founded in 1965 by Eugene Stead Jr., a physician at Duke University who had long been using ex-military medics to help run specialty units. By the 2001–02 academic year, nearly 10,000 students were enrolled in 132 accredited programs across the country. Weill Cornell's program, which began in 1973, is one of just two offering a broad-based curriculum that qualifies its graduates to work in both primary care and surgery. The twenty-six-month program receives close to 150 applications each year for each class of thirty-two students. Accepted applicants have a bachelor's degree and average twelve to eighteen months of health care experience when they begin study.

This year, more than 42,000 PAs worked in clinical practice in the U.S., according to the American Academy of Physician Assistants. In addition, their employment options are expected to grow much faster than the average for all careers in the next decade, due to the anticipated expansion of the health services industry, according to the U.S. Department of Labor.

Yet despite the proliferation of physician assistants in hospitals and at medical practices nationwide, confusion about PAs persists, says Marciano. "The biggest misconception people have is that a PA position is a job you have on the way to becoming a doctor," he says. "That's just not true." Others blur the line between PA and RN, says Fabel. "Many people think being a PA is kind of like being a nurse," he says. "Then other people think a PA is somewhere between a nurse and a doctor."

Thompson, who works at Flushing Hospital Medical Center's emergency department and in the obstetrics/gynecology department at New York Hospital Queens, has been on the receiving end of such confusion. Even so, she says, most of the time patients don't care who you are as long as you make them feel better. In one case, she says, a laboring obstetrics patient said she'd rather wait for a resident than be seen immediately by the available PA. Another hour passed while the woman waited before asking to be examined by Thompson. Within minutes, the patient had been checked and, thanks to a prescription Thompson wrote for pain medication, was more comfortable. "People initially think we just help the doctor write notes and do histories and physicals," she says. "But we prescribe medications and we're in the OR; I've done at least 300 deliveries. The misconception is that we're just an extra pair of hands—but our knowledge is strong."

— *Lambeth Hochwald*

Hospitals Go High-Tech

MEDICINE IS THE NEWEST FRONTIER FOR THE INTERNET REVOLUTION, BUT FOR DOCTORS, TECHNOLOGY MAY BE A MIXED BLESSING

rESIDENTS MAY NOT BE AT THE TOP OF THE MEDICAL hierarchy, but in at least one respect they are in medicine's vanguard. In the past two years, residents across the country have been leading a technological revolution—finding clinical applications for PalmPilots and other forms of Internet technology. "The use of PalmPilots among residents has skyrocketed recently," says Dr. Scott Rodeo, MD '89, a Weill Cornell associate professor of orthopaedic surgery and a surgeon at the Hospital for Special Surgery (HSS). "It used to be that residents walked around with five-by-seven-inch index cards with patient name, laboratory values, and X-ray information. Now they keep all of that information electronically. It's even easy for them to pass the information from one resident to the next using infrared ports."

Dr. Aruna Senevirante, a resident in orthopaedic surgery at HSS, uses his PalmPilot to create a log of the cases he sees. Storing the data in an electronic format makes it easier for him to reference for research purposes, he says. While on call, Senevirante consults his PalmPilot's ePocrates software to look up common medications. "PalmPilots have really helped to make me not only more efficient, but also more accurate," he says. "With ePocrates I can make sure I

don't have medication errors."

Other residents have taken to e-mail and the Internet. While completing an internal medicine residency at New York Weill Cornell Medical Center two years ago, Dr. Sandeep Jauhar was so taken by Internet usage among his peers that he wrote about it for the *New York Times*. Jauhar described how fellow residents routinely logged on to websites such as MD Consult and uptodate.com to look up drug and disease information. They downloaded articles and abstracts from sources such as Medline or the *New England Journal of Medicine*. Some used e-mail to communicate with patients who had chronic or non-emergency complaints. "Things have changed since I wrote my article," says Jauhar. "The technology seems to be diffusing into the physician community. I see a lot of older doctors carrying around Palm-Pilots now, which is definitely different from four years ago when I started my residency."

Yet, despite increasing evidence that high-tech applications—including hand-held devices—can increase efficiency and reduce human error, many older doctors are resistant to such innovations. Health care analysts estimate that 85 to 90 percent of residents and medical students use some form of Internet technology, as compared to 30 to 40 percent of more established, private practice physicians.

It's not that many physicians are technophobic, say experts, but simply that they don't see the benefits of getting wired. "The fundamental explanation is that from the doctor's point of view health care works well enough," says Michael Barrett, a senior health care analyst for Forrester Research. "There's a lack of a major external incentive such as income enhancement or regulatory mandate."

Doctors themselves say that some Internet technologies are a mixed blessing. Take physician-patient correspondence via e-mail, the Internet's "killer app." The strategy hasn't caught on with many doctors, who explain that it's simply not efficient. Rodeo, for example, responds to patients by e-mail if they initiate the exchange, but worries about unrealistic expectations. "They've sent you the e-mail," he says, "and they think you're going to be able to answer it right away."

This spring, when researchers at the University of Michigan Health System conducted the first major study of the clinical use of e-mail, they discovered that patient-doctor e-mail does not increase overall satisfaction with communication for either party. Nor did e-mail necessarily reduce the volume of phone calls for doctors.

But a far bigger concern for doctors using e-mail—or any type of Internet technology—is that of patient confidentiality. "The privacy factor is a big issue," says Rodeo. "It's one thing you're always worrying about with e-mails, which are not nearly as secure as you'd like to think." He and others cite government legislation, the Health Insurance Portability and Accountability Act, as a potentially major obstacle to certain technologies. The Act, which goes into effect next year, will regulate and restrict the ways in which patient information can be handled in hospitals and other clinical settings.

Despite these concerns, however, there are increasing signs that Internet technology has permanently altered clinical practices. Earlier this spring, a Baltimore, Maryland-based company called VISICU signed a contract with the NewYork-Presbyterian Hospital to install a "virtual" intensive care unit. Using Internet technology, doctors and critical care nurses remotely monitor multiple patients around the clock from a single command center.

Meanwhile, the Hospital for Special Surgery plans to provide all incoming residents with PalmPilots, outfitted with software packages such as MedMath and ePocrates, this academic year. The PalmPilot program was created with funds from the first-ever Patient Safety Award, granted to the hospital by the New York State Department of Health, and is part of an overall effort to reduce medical errors and to monitor education outcomes. "I don't think PalmPilots have been used to their full potential on the clinical side, and this is exactly what we're trying to do," says Laura Robbins, vice president for education at HSS. Robbins, who designed the PalmPilot program, says teaching hospitals can rely on hand-helds to help residents reduce errors, to keep track of residents on call, and to make certain the institution is meeting academic requirements.

"Whether or not this sort of program will translate into impact on older physicians is hard to guess," says Robbins. "Some will embrace the technology, though they'll need to be educated about why it's important. Technology needs to meet their needs to make their lives easier. But there's no doubt that those who grow up with this technology will be using it more."

— *Paul Zakrzewski*