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BACK TO TOP

BusinessWeek online

MARCH 28, 2005

COVER STORY

The Nurse: Melanie Weigeshoff

Why the "laptop-on-a-stick" is a hard-pressed R.N.'s best friend

When Melanie Weigeshoff joined Hackensack in 1998 as a nursing assistant, the hospital was still in the dark ages. Most medication orders, lab test results, and doctors' instructions for patient care were recorded on paper, in giant three-ring binders. Weigeshoff was constantly on the phone clarifying doctors' quickly scribbled notes, and she spent hours chronicling her patients' progress by hand. "We were always flipping, flipping, flipping through pages," she recalls, re-enacting the frustration with frantic waves of her arms.

Today that primitive hospital is just a memory for Weigeshoff, 26, now a staff nurse. Although she still uses paper on occasion, her primary tool since 2003 has been a laptop-on-a-stick, a PC that rolls around on what looks like an IV stand. As she greets patients at the start of each shift, she logs in to their electronic records through a wireless connection. She reviews vital signs -- temperature, heart rate -- which had been tapped into the computer by a nurse's aide earlier. Then she clicks over to the medication orders, making a note of each dose on the computer after she delivers it. "Charting is more accurate now," she says, "because we're right there, doing everything in real time." Best of all, she has shaved an hour of overtime off her day.

As the hospital industry grapples with an unrelenting nursing shortage, technology has taken a leading role in keeping employees like Weigeshoff happy. Many of the demands of managed care have been heaped onto nurses, burdening them with more patients to care for in less time and an endless flood of paperwork. The pressures have driven so many out of the profession that the supply of nurses is expected to fall 20% below the demand by 2010. Surveys reveal that one out of every three nurses under 30 plans to leave the job within a year. Technology that makes nurses' jobs easier won't be a panacea, but "it's an important consideration in making the hospital a better work environment," says Carol J. Bickford, senior policy fellow at the American Nurses Assn.

Technology is lightening Weigeshoff's administrative load in all kinds of ways. As she prepares to visit patient Alvest Williams, she grabs the laptop and wheels it into his room. Earlier that day, a roboticized sorting machine in the pharmacy downstairs had read Alvest's prescriptions on his electronic chart and sent them to Weigeshoff's unit. As she checks each prescription on the screen, Williams calls out the names of the drugs in her basket to make sure Weigeshoff has everything, gesturing toward the laptop as if it were another person there to help him feel better. "Protonix?" asks the 60-year-old, who is recovering from pneumonia. "Yep," says Weigeshoff. In the past, she would have had to collect handwritten prescriptions, enter them into paper charts, and fax them to the pharmacy.

For Weigeshoff, the laptop-on-a-stick frees her to be the nurse she dreamed about being when she was a little girl growing up in northern New Jersey. As a teen, she relished the job of big sister, coddling her toddler brother and sister when they needed a Band-Aid on a scraped knee or a kiss on a bumped head. "I love taking care of people," says the ebullient nurse.

Information Central

But when she first started in nursing, she often struggled to find time for the caregiving part of her job. She was always on the phone with the pharmacy, pressing them for medication refills, or with doctors, trying to decipher

handwriting. Now the system ensures that the pharmacy gets drugs to nurses on schedule and that almost every piece of information she needs is at her fingertips, from what insurance plan her patients are on to what tests they've had in the hospital.

Weaning the nurses off traditional paper charts isn't always easy, though. "On the first day we go live on a unit, everyone wants to kill me," says Teresa C. Moore, the hospital's manager of clinical informatics. She oversees the rollout of the technology to the nursing units, with about 50% equipped with wireless computers so far. "It's a drastic change."

Unlike most of the doctors at Hackensack, the nurses are hospital employees and are required to use technology in their jobs. Moore runs weekly user groups to gather feedback. The first day the system went online, for example, nurses complained that the diabetes-treatment insulin was listed on the computer as a regularly scheduled medication. But nurses have to adjust insulin dosing based on patients' blood-sugar levels -- a process they struggled to record because the hospital deployed the software incorrectly. The nurses protested so loudly that Moore and her team worked five days straight to fix the problem.

Weigeshoff welcomes any technology that will make her job easier. Paper charts won't go away anytime soon -- the hospital still requires printed copies of everything entered in the computer, and some notes can't be made digitally yet. "I would love to never have to write again," she says. A dream? Maybe. But at Hackensack, it's getting closer to reality.

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COVER STORY

The Doctor: Dr. Lauren Koniaris

Online prescribing and record-keeping free her up for patients

It's a chilly February morning, and Dr. Lauren Koniaris is hustling down the hall at Hackensack. She stops in room 9001 and finds her first problem of the day: Patient Dawn Tribuzio, 62, complains that her skin has felt itchy ever since she started taking penicillin to treat a flare-up of sarcoidosis, a disease that causes inflammation of the lungs. Koniaris rushes to a computer in the corridor and pulls up Tribuzio's electronic chart. It doesn't say she has a problem with penicillin, but this is her second reaction in recent weeks -- a sign she may be developing an allergy. Koniaris clicks through a series of drop-down menus to cancel the antibiotic and order anti-itch cream. Then she makes a note of the allergy in Tribuzio's electronic record so the hospital won't prescribe the antibiotic to her again. "Now the pharmacy knows forever," Koniaris says.

At 4 feet, 11 inches, Koniaris may not stand out in a crowd, but she's a giant in Hackensack's battle to go digital. A lung specialist who's in private practice just a block from the hospital, she has entered more than 120 medication orders into Hackensack's central system since January, making her one of the top five users. Dr. Gerard A. Burns, who's responsible for persuading Hackensack's doctors to use technology, counts on early adopters such as Koniaris to convince doctors still wedded to their pens to start ordering drugs and lab tests on PCs.

Getting doctors to go digital is one of hospitals' most urgent goals. Unless physicians use the central system for patient records and prescriptions, they won't get instant warnings about dangerous drug interactions, and hospitals won't be able to collect data needed to improve care. Yet doctors have resisted attempts to get them to use digital devices. They have griped that the technology was clumsy or slow or put patients on edge.

What has made the difference at Hackensack is its ability to foster dialogue between doctors like Koniaris and techies like Burns. It's time-consuming, and the exchanges can be heated. But they bear fruit. For example, when the e-prescription system was launched, Koniaris complained that the software forced her to slog through too many screens and enter information about patients that really wasn't necessary. "She'd send me notes that said, 'This sucks. Fix it,'" says Burns. "And we did." Now the e-prescribing mirrors how doctors normally prescribe drugs -- all it takes is a few clicks to order what they need.

Hallway Monitors

Another time, Burns lent Koniaris a pocket-size PC, hoping she would carry it on her rounds and enter orders right from the rooms. But she felt it hurt her bedside manner. "It takes my focus away from patients when I have so little time with them already," she says. So Burns stopped pushing the pocket PCs. Instead, the hospital ensures there are enough PCs in the halls.

Spend a day with Koniaris, and you quickly realize that her biggest problem is a shortage of time. A 38-year-old mother of two, she's a whirlwind of multitasking. So technology that can save her time is a godsend. One reason she likes using PCs to order medicines is that she can see right away when she signs on what prescriptions need to be refilled, instead of taking several minutes to page through paper records to get the information. She logs on to Hackensack's Web site to sign off on patients' records because it saves her from waiting for the hospital's snail-like

elevator to take her to the medical records department.

For Koniaris, the minutes saved translate into more time to spend with patients. It's not a benefit that she measures in dollars. Nor do patients perceive a direct link between technology and the quality of care. But patients like Tribuzio do notice the small blessings of being treated by a doctor who isn't constantly tied up in an administrative muddle. "I call Dr. Koniaris, and she calls me back in 10 minutes," Tribuzio says.

Technology may save doctors time, but it also could cost them some control. Digitizing all these data means hospital administrators have access to information they can use to second-guess doctors' decisions. Koniaris is well aware that Burns is getting together with other hospital staff to review medical records on his pocket-size notebook computer to try to determine which patients might be able to leave the hospital sooner than their doctors think they should. The Harvard-trained doctor doesn't appreciate the micromanagement. "They call me all the time and ask, 'Why is this patient still in the hospital?'" she says. "The pressure is intense."

Back at the hospital, Koniaris has discovered her second penicillin mixup of the day. Patient John Mahony, 83, is allergic, but the doctor who admitted him put him on it anyway. As Koniaris switches him to a different antibiotic and says goodbye, Mahony asks: "How long am I going to be in?" Koniaris makes no promises. Still, with technology on board to keep medication errors from befalling Mahony, he may be home sooner than he thinks. That's an outcome sure to make the hospital as happy as it makes the patient.

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COVER STORY

Online Extra: Saving Lives Shouldn't Be This Hard

I almost didn't live to write this story, thanks to the maddeningly hidden information I needed to make correct medical decisions

Of all the days I could have died, last Nov. 11 would have been the most pointless. It was 8 weeks after I learned that at 43 I had stomach cancer. In the morning, I was supposed to drink a barium shake to light up my insides for a scan. In the afternoon, I was supposed to have anesthesia so my surgeon could install a port to receive my chemotherapy. There was only one problem: If I drank anything before going under, there was a chance I'd vomit during anesthesia. And there was a small chance it could kill me.

Neither doctor knew what the other was planning to do. A hospital administrator had made both appointments since I'm enrolled in a clinical chemotherapy trial. She didn't spot the conflict. The doctors didn't have enough information to raise the red flag. So I sat in my radiation oncologist's office, the barium about as far from me as this keyboard is as I write, with a technician telling me to drink up.

And the only reason I know for sure why I'm still alive is that I insisted on calling the surgeon, who demanded I cancel the scan.

ON YOUR OWN. Then I raged at the tech who happened to be there, demanding to know how this happened. Then she fetched a supervisor. I rained enough F bombs to turn the hospital into rubble, but I really only had one question: "Why the F was preventing this my job?"

In fact, it is -- and the primitive state of communication in medicine is why. A medical-records network that links different like what President George W. Bush is supporting, would have let each doctor know what the other was planning and would prevent such errors -- which kill as many as 195,000 Americans each year. But that system is years away. In the meantime, the grim fact is that you're on your own, whether you know what you're doing or not.

The health-care system doesn't give patients the tools or the support they need to make confident decisions about choosing doctors, treatments, or hospitals. And though patients are using the Internet more than ever, many don't know the most effective ways to get the data they need when they need it most. I didn't. I know from being a reporter that after years of delay, the digital hospital is beginning to emerge. I know as a cancer patient -- excuse me, that's cancer survivor now -- how critical and how overdue it is.

WHAT TO DO? In fact, I found the system almost conspires to keep you from learning what you need to know to manage your care. My doctors, perhaps wary of seeming to make promises I could hold against them later, were chary with information even about themselves. My surgeon John Cunningham, for example, declined to mention that a trade directory had named him one of New York's top surgeons. Modest, perhaps, but I wish he had bragged. It was something I needed to know.

Many Web resources I consulted were shockingly bad: Even Google was regularly stumped by my search queries about stomach cancer treatments, and I'll reserve a special place in purgatory for the New Jersey Health Dept.'s

useless Web site. And my hospital was no help at all, either. There was no staff to help with my research, and they didn't even give me access to a computer when I was in the hospital.

What should hospitals do? First, they ought to give patients access to the Internet. My hospital, a good one in a very tech-savvy New Jersey suburb, didn't have any way for me to get online. There was no PC in a patient lounge, no point in my bringing a laptop into my room, nothing. The sum of the written information I got in five days in the hospital was two three-page Web printouts that my in-house doctor brought me.

IN THE DARK. And one of them, from the Cleveland Clinic's Web site no less, gave treatment advice for colon cancer -- which can come from the same gene my doctors think caused my stomach tumor -- that I know from family experience to be wrong. The information I got wasn't nearly enough, and it wasn't until I got sprung from the hospital that I could even begin to research my illness or my options intelligently.

By the time I had access to any meaningful information, I was supposed to have made my big decisions. In fact, I had decided whether to have surgery (yes, I lost most of my stomach, along with about 50 pounds), whether to have it at that hospital or head into New York to a specialty cancer center (I stayed put), and who my surgeon should be. I was supposed to do it more or less in the dark, I guess.

I couldn't get access to much information about Cunningham beyond his partners' impressions of him and learned nothing at all about my hospital's safety record or ratings for cancer treatment. I got on the phone, mostly with doctor friends, and then I guessed. I happened to guess right. But I'm still pretty ticked off that I had to guess.

TEACH PATIENTS. Second, give patients help. If there's one thing I remember from reporting this week's cover story, The Digital Hospital, it's a hospital exec saying elderly patients can hardly be expected to understand their treatments when you can plainly see how baffled many are by the hospital's parking garage. It's not just older them: I'm young, smart, and my brain was basically soup, both from the stunner of my diagnosis and the fact that I'd lost basically half of my red blood cells.

Hospitals need to help patients learn how to study their conditions and their options. They're full of social workers, counselors, and even volunteers. Training them to train patients in learning about their diseases and their options is an investment in letting us learn quickly how to coordinate our own care. And it's a job a motivated candy-striper could handle. Even doctors, who are known to complain that patients rely on unreliable Web sites, should be way more active in helping us find something better.

What should patients do? First, use your insurance company. Among the most important payoffs from hospitals having upgraded their information systems is that health-care payers, from Medicare to HMOs, now know an enormous amount about hospital quality. And they increasingly are giving incentives to use the best. Sometimes, they will pay the good hospital a few percent more per each patient, figuring they can afford to because they'll save money by not having to pay for treating complications or longer hospital stays. Sometimes, they'll even give you a lower co-payment if you go where they guide you.

SMART ADVICE. More often, they'll designate a hospital as a "center of excellence" for treatment of a particular disease and actively push the hospital. In my case, a UnitedHealthcare nurse called me at home after the first of my two hospital stays to nudge me to switch hospitals and continue my treatment at Memorial Sloan-Kettering, the big-deal cancer center in New York. They didn't get to me until after I had made my decisions, but they knew much more about what difference moving to Sloan might make than I realized at the time.

It wasn't until doing my reporting for this week's cover that I grasped what United's strategy really was. And, contrary to my suspicions back then, they weren't pushing the rock-bottom cheapest option. United execs say about 90% of the people who seek their advice about where to go end up taking it. If I had it to do again, I'd call United first.

Second, get a hospital report. I wasted a ton of time trying to learn about my hospital options. To get the real scoop on a hospital in a form you can understand, you need only 10 bucks and two words: HealthGrades.com. The Colorado consulting firm rates hospitals using a quantitative formula based on results of Medicare cases. From orthopedics to heart disease, their ratings break down hospitals' practices in detail and reduce things to simple star ratings you can decipher even when you're in pain and your head is spinning.

THANK YOU SO MUCH. Very basic info is free, and a long summary of a hospital costs $9.95. In a hospital, an aspirin seems to cost three times that. Next time, I'll demand any hospital that wants my business give me their HealthGrades scorecard. It's no different than insisting that a used-car dealer give me a vehicle-history report. At least as much is at stake.

Ultimately, though, I have no complaints. I finish chemotherapy in about a week, my tumor didn't make it to my lymph nodes, and the decisions I've made seem correct so far. Indulge me as I say thanks: John Cunningham saved my life. Adam Barrison, my gastroenterologist, became an instant friend when I most needed one, and he got the diagnosis right. And my oncologist Michael Wax, on top of recommending a clinical trial that is among the most promising out there (I had six weeks to check out the trial, and I did, thoroughly), has been the strangest blessing of all: a cancer specialist whose bent sense of humor got me to laugh at myself and my condition. As Dr. Wax himself might say, who knew?

But like any patient who looks at U.S. health care critically, I know the system doesn't give patients and doctors the information they need when they need it. It's a shame. And as consumers' understanding of what technology can do to prevent medical mishaps like mine rises, it will soon be seen as malpractice. Lives are in the balance, including yours.

By **Timothy J. Mullaney** in New York
EDITED BY Edited by Patricia O'Connell

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COVER STORY

Online Extra: President Bush's IT Doctor

Physician/economist David Brailer, point man for the Administration's push for e-health records, on where the planning stands

Dr. David Brailer may be the most important man in health care these days. Tapped last year as President Bush's national coordinator for health information technology, the physician/economist is the point man for the President's plan to help hospitals develop electronic health records. All the care a patient gets -- from hospitals, doctors, or anyone else -- would be tracked in a single, privacy-protected database so that health-care providers everywhere would have the information they need give safe, effective care without duplicating each others' efforts.

The Administration is also tinkering with pay-for-performance experiments that pay hospitals more if they rank in the top 20% in quality, as rated by their compliance with established medical practices. Brailer recently spoke to *BusinessWeek* E-Business Editor **Tim Mullaney**. Edited excerpts of their conversation follow:

Q: In the 1990s, people expected health care to get a big productivity boost from the Internet. Most experts agree it didn't happen. Why not?
A: Well, health care underinvests in information technology. We invest on average 2% or 3% of revenue for the typical hospital and less than that for a physician's office. Many industries invest 12% or 15% of their top line in their IT infrastructure.

Health care is an inordinately complicated industry that really lacks the business model for productivity improvement because it's so fragmented, and there hasn't been a force that has been able to consolidate and integrate the industry in a better way.

Q: What's the outlook for changing that over the next 5, 7, 10 years?
A: I think there's a good outlook. People are aging, and the people who are aging have been [familiar with IT] in their professional productive years and they expect to continue [to use IT].

Q: Experts have claimed the industry can easily get $85 billion a year in cost savings out of things like electronic health records. One big Washington lobbying group, citing you, put that number at $140 billion a year. Is that realistic?
A: Well, $140 billion is 8% of health-care spending now. I think that number is actually well founded by estimates that have come in. The Center for Information Technology Leadership is one group that estimated numbers in that range. Other extrapolations have estimated numbers that are, frankly, much larger.

We're trying to unleash consumer choice and better information for consumers. We'll get the gains that happen if a doctor gets better information. Plus consumers will be able to better evaluate their options and more able to make the industry accountable in terms of less duplication or more timeliness of service.

Q: How does what you do help lay the groundwork so these kinds of gains can be realized?
A: We have called for four things to accomplish the President's agenda. One is that clinicians use an electronic

health record. There is very very strong evidence that when clinicians use electronic health records there is a substantial health-status benefit.

The second thing we've called for is portability of information. The idea is that information flows with the patient, and when they show up in an emergency room or at a doctor's office or an imaging center, their information goes with them unless for whatever reason they don't want it to.

The third piece is personal health records. We want to see every person have access to a personal health record and be able to communicate with their clinician using it.

Finally, we want to streamline the various federal systems that collect data. The ability to collect data for pay-for-performance is an important thing, but we also collect data for adverse effects for drugs and bioterrorism and clinical trials. That becomes very burdensome to the private sector if we don't have a mechanism for making that more streamlined.

Q: What is the $125 million the President has proposed spending each year to promote health care information technology going to be spent on? And how do you answer critics like one hospital exec we met who called it a spit in the ocean?
A: The estimates of what it costs to [install electronic records at all hospitals and doctors' offices] go from the low billions to as high as $10 billion. What we need to do is determine what it really costs.

The federal government isn't going to give people electronic health records or pay for it or set up these networks. We don't want to see just a regulation that requires the industry to do that. We're trying to figure out how to set up a market where electronic health records are cheaper and more valuable to doctors so we can really harness their buying power.

The money we're spending this year and next year is to set up the market institutions. One good example is a group called the Certification Commission for Health Information Technology. What it does is inspect electronic health records and say this one meets all the reasonable criteria for what's a good system and this one doesn't.

Q: What are the best hospitals doing that the smaller hospitals aren't?
A: They have electronic data repositories that can keep track of what's happening to patients enterprisewide. They have bar-code scanning used by nurses when they're giving drugs to prevent administration errors. They have robotic systems in the pharmacies that reduce the errors of a manual pick. They have fully integrated imaging into their electronic health record. They have personal health records. I just gave you [a few] examples of probably 30.

Q: You see the Institute of Medicine report saying 44,000 to 98,000 lives are lost to medical errors in hospitals each year. HealthGrades, a private consulting firm, says it may be as high as 195,000. What kind of reduction is realistic as we put something closer to the kind of technology corporations have into hospitals?
A: Well, it's hard to know because we don't know the full denominator of how many people really are injured. But I do believe that the number is an underestimate.

So what savings could we get of whatever the number is? Well, if you look at the studies with automated prescription ordering, implemented in ideal circumstances, there is a more than 80% reduction in errors that relate to prescribing choice, dosing, and fulfillment and administration. But I don't think that necessarily means that 80% of the deaths get reduced. My rough calculation is we could reduce inappropriate deaths by 50%. I think the numbers are similar for ambulatory errors.

Q: But drug errors aren't the only kind of faulty medical care. What other mistakes can IT help prevent?
A: I think that [there's a larger issue]. There's very good evidence that these systems improve preventative compliance -- computers remind us to make sure that a patient is on aspirin if they've had a heart attack or to check the stool for blood of someone over a certain age. No one has really ever forecast the death saving that comes from [that] because the deaths [that are counted] are only from errors, which means you do something but do it wrong.

We accept that errors and mistakes and missed things and omissions are just part of health care. I think the lesson

from the leaders is no, it can be different. And we have to reset doctor and consumer expectations to expect a much higher level of care.

Q: Medicare is experimenting with a system in which hospitals that provide the highest-quality care will get paid more. Why will that work, and what must hospitals do to keep up?
A: We definitely want to see a market that competes on quality, and we haven't been able to do that because we've never been able to measure quality or health status. We now can not only measure quality but we can measure the leading indicators: We know that if a doctor gives patients aspirin after they've had a heart attack, they will have a substantially lower death rate and fewer heart attacks later.

There may be 10 to 12 diseases where it seems like these golden truths have gotten pretty well evident, that if we follow them we're going to do much better. That's evidence-based care, and [compliance with evidence-based care procedures is] what pay-for-performance is based on. But this is really where information technology comes in. It's impossible to [keep track of this data] without IT in place. I think pay-for-performance will drive the adoption of health IT because it's necessary to measure and report that data.

Edited by Patricia O'Connell

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COVER STORY

By **Arlene Weintraub** in Hackensack, N.J.

Online Extra: Meet Mr. Rounder

Equipped with two-way video capability, this robot can serve as a doctor's eyes and ears in keeping in touch with patients

On a mid-February day at Hackensack University Medical Center in Hackensack, N.J., a robot rolls into the room of patient Harvey Marcus, who's recovering from hernia surgery. "You lost weight!" Marcus jokes to the robot as it rolls to the foot of his bed.

But it isn't the robot Marcus is bantering with -- it's surgeon Dr. Garth Ballantyne, who appears on the video screen that serves as the robot's head. Thanks to the robot, Ballantyne is making rounds without ever having to leave his off-site office. A wireless Web link allows Ballantyne to fire up the robot from anywhere, using a laptop and a joystick to drive it through the hospital.

Mr. Rounder, as the robot is called, was bought by the hospital in November, and he has since become a favorite of both doctors and patients.

CREATIVE MULTITASKING. "That's amazing," Marcus says as Mr. Rounder leaves his room. "If I were in really bad shape, I would wish the doctor were here. But this is better than getting a voice mail."

Marcus' short exchange with Mr. Rounder exemplifies both the promise and the controversy surrounding the increasing presence of robots in health care. With the rise of managed care, doctors are under constant pressure to treat more and more patients, creating a time crunch that forces them to find ever more creative ways of multitasking. Machines such as Mr. Rounder can ease the burden.

Say a doctor wants to visit a patient recovering in the hospital but has a full slate of patients to see in his private office several miles away. During a break, he can sign onto the robot from his office and make a virtual visit to the hospital. Critics say no visit from a machine can ever substitute for the personal touch a real doctor provides, but Ballantyne sees Mr. Rounder as an indispensable physician's assistant. "It's a timesaver," he says.

BUZZING SUPERHERO. Mr. Rounder's creators at tech startup InTouch Health have worked hard to make the robot personable n- as personable as a cross between R2-D2 and a sophisticated videoconferencing system can be. The video camera perched on the robot's head allows doctors to look at wounds as they're healing and even read test results that nurses hold up to the camera.

More important, doctors can chat with patients face-to-face to help determine how soon they can go home. "Before people see it, they're resistant to the idea," says Yulun Wang, CEO of InTouch, based in Santa Barbara, Calif. "But once they see that it's just like communicating with a real person, their opinion changes radically."

InTouch's invention is starting to catch on. Thirty-five Mr. Rounders are buzzing around hospitals across the U.S. Customers can rent them for $4,000 a month, or buy them for $120,000 a piece. On Mar. 10, UCLA Medical Center

announced it would test a Mr. Rounder in its neurosurgery intensive-care unit. And earlier this year, Detroit Medical Center decided to buy 10 to employ throughout its facilities.

Mr. Rounder is especially popular in the pediatrics wing, where he rolls around dressed in a superhero's cape. "When the robot comes in, everyone giggles," says Gwen MacKenzie, the hospital's chief operating officer.

BEYOND PATIENT CARE. For many hospitals, Mr. Rounder is filling a critical void. A nationwide shortage of intensive-care specialists has left hospitals scrambling to provide timely care to the sickest of patients. Detroit Medical Center plans to use one in its intensive-care unit so its doctors can "be" in two places at once. For example, if a neurosurgeon has to spend the day in the operating room but wants to check up on a patient recovering in the ICU, he can log onto Mr. Rounder and visit the patient without leaving the OR.

The robots can do more than help with patient care. Some hospitals use them to beam in experts to consult on difficult cases or to allow physicians to attend administrative meetings from outside the hospital. Others use them to send case managers to chat with patients' family members before patients check out of the hospital. And recently, a non-health-related tech company bought two Mr. Rounders so employees in their Toronto headquarters could train staffers remotely in Orange County, Calif.

"It's finding its own market," says Alexander Spiro, senior managing partner at Beringea, a Farmington Hills (Mich.)-based venture-capital firm. The robot's versatility, Spiro says, has prompted Beringea to invest more than $2 million in InTouch so far.

FULL-FLEDGED STAFFER. InTouch is hoping future iterations of the robot will be even more sophisticated. It's working on integrating Mr. Rounder with hospitals' patient-charting software so doctors might be able to save snippets of streaming video right into their patients' electronic charts. InTouch is also working on a robot that might be able to find its own way from room to room by reading markers on the floor so doctors won't have to use joysticks to drive it around anymore. "That will take a little time," Wang admits.

Back at Hackensack University Medical Center, Ballantyne is driving Mr. Rounder down the hall so his battery can be recharged. Mr. Rounder stalls a few times during the trip because the wireless connection to Ballantyne's PC keeps dropping off -- a sign the hospital's wireless network needs a little more work before the robot can operate at full capacity.

Still, he's clearly a full-fledged staff member. As Mr. Rounder passes through the hall, a nurse stops him so she can discuss a patient's condition with Ballantyne. Then she jots a note in the patient's chart and jokes under her breath, "Reported to robot."

As machines take on a bigger role in health care, such scenes are sure to be repeated in hospitals across the country.

Edited by Patricia O'Connell

How Technology Is Transforming Your Hospital -- Fi

Wiring hospitals will change the quality and business of health care by tracking patients and costs more efficiently. He
leading-edge hospitals like Hackensack University Medical Center are doing:

1. INVESTING IN TECHNOLOGY
Health care was so slow to adopt Net technologies that output per worker in the sector fell in the 1990s. Now spendin
to rise. Take Hackensack: Since 1998 the New Jersey hospital has spent $72 million to upgrade its tech infrastructure
pharmacy, and roll out electronic medical records.

2. SELLING DOCS ON GOING DIGITAL
Doctor resistance is a major hurdle to e-health. To get past this obstacle, in 2002 Hackensack hired a trauma surgeon
evangelist. He's making progress: The hospital's internal Web portal had 344,000 visits last year, up from 3,000 in 20
remain: Only 10% of tests and drugs are ordered electronically.

3. USING DATA TO BOOST QUALITY
The real payoff is finding errors and improving care. Hackensack halved the time between when a drug is prescribed
reaches the patient. It also redesigned its congestive heart failure and orthopedics procedures, improving to the top 1
treating those diseases in a Medicare program.

4. GETTING DEALS FROM INSURERS
Insurers are paying more for better care, since it leads to fewer repeat visits. Medicare is testing a program that pays
case to hospitals with treatment scores in the top 10% for illnesses such as pneumonia, heart attacks, or hip replacen
Medicare pays for about 30% of U.S. hospital care, that's enough to double profits at some hospitals.

5. USING QUALITY TO LURE CUSTOMERS AND BUY MORE TECH
Insurers and big employers are trying to push consumers to tech-savvy, high-quality hospitals. How? They reduce co-
patients use preferred providers and post care-quality info on insurers' sites. Horizon Blue Cross is pushing cardiac pa
Hackensack because of the improvements it has made using tech.

BusinessWeek online

MARCH 28, 2005

COVER STORY

Online Extra: Crusader for Clearer E-Info

Entrepreneur Jonathan S. Bush -- yes he's related -- discusses how Web-based medical records can become a workable reality

Jonathan S. Bush serves as CEO of athenahealth, a Waltham (Mass.) company he founded in 1997. The business offers a Web-based system for managing physicians' back-office processes like insurance claims processing. The entrepreneur, a first cousin to President George W. Bush, isn't afraid to speak out about the U.S. government's goal of establishing Web-accessible electronic health records for every American. Jonathan Bush spoke recently to *BusinessWeek* science writer **Arlene Weintraub**. Following are edited excerpts from their conversation:

Q: What do you think of your cousin President Bush's plans to have all patients' medical record automated and put online, so wherever anyone goes for medical treatment, his or her entire medical history will be accessible at the click of a mouse?
A: I love the idea of the electronic health record. But I'm sure it won't be adopted. And if it is, it won't work.

Q: Why not?
A: There needs to be more investment on the process side. Physicians and hospitals can't get the easy things done. They can't get their claims paid. Some of them don't know basic things, like what their revenues are. We need to find some way to make those capabilities available to everyone.

Q: So you don't think all the software that's out there to create electronic patient charts can do the job?
A: Software isn't the solution. A lot of tinkering has to happen to make sure a hospital's or physician's business processes work properly so they can take advantage of the technology. Hackensack University Medical Center, for example, has people patching all the things in the electronic medical records together. They got religion, and they're going crazy and that's great. But what they really should get credit for is adapting their business practices to make the technology useful.

Q: Skeptics says doctors are technophobes who are resisting the adoption of electronic medical records. What do you think?
A: Not true. These guys do surgery on your heart via remote control. They look for solutions for noninvasive surgery in new devices. It's their job to [use technology]. It's not their job to futz around learning the details of every one of Aetna's 2,000 benefits packages.

Usually there's some paper pusher in the doctor's office doing that in her head. But that information needs to be online, because it changes every week. We're trying to provide virtual back-office systems to do that for medical groups.

Q: How does your technology ease the process for physicians' offices?
A: Say a patient calls to make an appointment. The person who takes the call might not know that the patient needs a referral. Our technology watches as that appointment is being made and corrects mistakes along the way. The technology interacts with the work flow. It automatically alerts the office that this person has the cheap version of

Aetna, so they need a referral.

Q: One obstacle to e-health often cited by experts is that federal law prohibits hospitals from giving financial incentives, or "kickbacks," to doctors in return for referring patients to that hospital. That means hospitals can't buy computers and other equipment for doctors to use in their private practices outside the hospital. And the cost to put such a system in place could be tens of thousands of dollars.
A: How can it be O.K. for a hospital to have electronic medical records, but then not be allowed to pay for its doctors [to have access to them] when they're outside the hospital? The government needs to make some changes to make this wheel spin faster.

Q: Do you think the U.S. government is giving health-care providers enough support -- financial or otherwise -- to go digital?
A: I'm thrilled George put $125 million into the budget. But that's just a drop at the bottom of a bucket. He's got to do more than just focus on driving adoption of technology. He's got to focus on developing unifying standards and on including clinical information with claims processing, and so forth. I hope they make this a high priority.

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COVER STORY

The Tech Guru: Dr. Gerard Burns

A former trauma surgeon champions life-saving data

Six years ago, Gerard A. Burns was as tech-phobic as any doctor. A trauma surgeon at Yale School of Medicine, he had his secretaries read him his e-mails while he was scrubbing up for surgery. So how did the 44-year-old become a key player in turning Hackensack into a leading e-hospital? He got bored. In 1999 he left for business school and ended up landing a job at a medical software company. When Hackensack in 2002 was looking for someone to get its 1,285 docs to adopt digital medicine, Burns jumped at the chance.

Hiring an M.D. for the job may have been one of Hackensack's canniest decisions. Burns's degree gives him instant credibility with the physicians as he prods them to use the hospital's fast-evolving tech systems. "You have to be part diplomat and part hard-ass," says Burns.

Working from a windowless office in Hackensack's tech department, Burns has three or four basic jobs. He evangelizes technology to doctors. He personally reviews the electronic orders doctors place and coaches those who don't get it quite right. And he translates complaints from doctors about hard-to-use technology for the tech group so it can fix them.

The most important part of his job, though, is marshaling data to help the administration improve care. This practice, called informatics, is a touchy business because it typically involves midlevel administrators gathering stats and then trying to use them to get doctors to change their habits. At most hospitals, the bean counters get sent back to their cubicles, thoroughly chastened. Besides being a doc, Burns, whose title is director of medical informatics, has the advantage of being on Hackensack's medical board, the hospital's top medical policymaking body. "He probably has more influence than anyone at the hospital because he works with every department chair," says Chief Medical Officer Dr. Peter J. DeMauro. "They know he has my support."

Slicing, Dicing

Follow Burns around, and you see how fast plans are moving. He holds tech briefings for doctors and sits in on sessions held to review patient cases. One of his duties these days is helping to pore over the data from Hackensack's procedures in orthopedics, medication management, and pneumonia. This task is being prompted in part by the Medicare pilot program to track hospitals' quality of care and then pay more for better care. The Medicare data highlight things Hackensack may do sloppily, such as not giving pneumonia patients flu shots or being less than vigilant about documenting infection control in orthopedics. Burns slices and dices the stats and then tries to help docs and administrators find ways to tighten up.

Collecting data lets Hackensack look much more closely over doctors' shoulders -- something they don't always like. Take his pet program: rolling out a procedure called multidisciplinary rounds, or MDRs. These rounds are daily reviews of each patient in a nursing unit, conducted by nurses, case managers, social workers, and an in-hospital doctor. In some units, teams use Lifebooks, which are wireless laptop PCs, to pull up patients' vital signs, doctors' notes, and lab tests from the hospital's central system. They can prescribe drugs or even recommend a patient be discharged, a dramatic step since doctors traditionally control such decisions. The hospital raised the ante this

winter with a policy that temporarily suspends doctors from handling cases if they repeatedly ignore the MDR team's recommendations.

That sparked one of the few signs of rebellion at a hospital where the administration has moved gingerly to avoid spooking doctors. "People are irate over this," says Judith C. Gellrick, a kidney specialist, during one early-morning MDR meeting. But the meddling is producing results. Since 2001, floors using Lifebooks in MDRs have slashed the average length of patient stays by 24%. And readmissions for the MDR floors, a good gauge of whether patients are being sent home safely, dropped 12% between 2002 and 2004. "MDRs are probably the biggest contributor to the improvements in quality that we've made," Burns tells the group.

Crunching data instead of patching bones may seem like a sharp turn. But as hospitals get wired, they're showing that cold data can help patients as much as surgical heroics. "If people ask me, 'Don't you miss being part of a team that saves lives?' I say, 'I still do [save lives], but in a different way,'" Burns says.

That is the hope of health-care organizations across America. They're stepping up tech spending, betting that it will prove an antidote to spiraling costs, while improving care. Thousands of lives and billions of dollars are at stake. Hackensack is just a start. The future is taking shape, one digital hospital at a time.

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Well Spent
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Special Reports
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