It was one of Lehigh Valley Hospital’s tele-intensivists — doctors who use high-tech equipment to monitor critically ill patients from a remote site — speaking via a video conferencing system. “I explained that I’d keep an eye on her while we determined the best treatment,” says Vanessa Ribaudo Kaufman, M.D., director of respiratory care. She and three nurses were overseeing the care of 140 patients in eight ICUs within two hospitals.

In a $3 million command center, three miles away, Dr. Kaufman pulled up Rice’s test results. “Her echocardiogram showed a four-inch-long blood clot extending into the heart. It was too big to dissolve with thrombolytics or extract with a catheter.” Doing nothing wasn’t an option. “The clot could travel to her lung, which might be fatal.”

The M.D. conferred with surgeons and specialists, then returned to Rice’s virtual bedside with their solution: open heart surgery. After the clot was removed, the teen made a full recovery and is now back to her favorite sports: horseback riding and cheerleading. Impressed by the care she received, she’s considering a medical career. “I’d like to be a midwife or surgeon, because the experience made me realize how precious life is.”

Protecting Patients with Smarter Care
Hospitals all over the U.S. are showing off their tech-savviness with such innovations as computerized physician order-entry systems, supply cabinets that open with a biometric thumbprint reading and Web sites where patients can view test results — or even check in to the ER. To speed up diagnosis, the latest CT scanners image entire organs at a single pass. And for patients on ventilators, a new, heart-shaped breathing tube called Mallinckrodt TaperGuard seals out bacteria so effectively that it cuts the risk of ventilator-related pneumonia up to 95 percent.

State-of-the-art technology helps doctors quickly zero in on the right treatment, improves patient comfort and safety and can shorten hospital stays. “A growing body of literature shows that the best way to enhance quality of care is by preventing complications,” says Douglas Hansell, M.D., M.P.H., chief medical officer of Covidien, a Mansfield, Mass., healthcare equipment firm. Smart diagnosis and treatment are saving lives: An American Hospital Association survey found that at the nation’s 100 most wired facilities, risk-adjusted death rates were 7.2 percent lower, on average, than at other hospitals.

Surgery 2.0
Literally on the cutting edge of medicine are intelligent ORs, where X-rays have been replaced with interactive 3-D imaging. At Ronald Reagan UCLA Medical Center, says Ned Martin, M.D., chair of neurosurgery, “this technology has revolutionized brain surgery. By touching a finger to a high-definition screen, we can see realistic reconstructions of every structure in the patient’s head, from any direction. That lets us mentally rehearse every step of an operation to find the most advantageous approach, like a professional golfer visualizing every stroke and hole of a golf course before he tees off.”

Instead of crowding around an operating table, surgeons at Swedish Medical Center in Seattle sit at computer consoles six feet away, using fingertip controls to manipulate a Da Vinci surgical robot’s four arms. Operations are done by inserting slender, bendable instruments attached to the arms through dime-sized incisions, which doctors guide by viewing magnified

High-Tech Healing
By Lisa Collier Cool

Ashlynn Rice, 17, tried to be brave when she was rushed to the ICU in February with chest pain and shortness of breath. She made jokes and told her parents to go home for the night. But after they left, the 11th grader from Quakertown, Pa., was too tense to sleep. “At midnight, I heard a voice say, ‘I’m watching over you.’ I thought it was God, then I looked up and saw a doctor on an overhead screen.”

Weekend warrior first. Then patient.
Hospitals Go Green

Surgical scrubs aren’t all that’s green at America’s medical centers. More than 25 percent of them have joined Hospitals for a Healthy Environment, a government-supported initiative to lighten medicine’s eco-footprint. Among its goals are reducing waste, conserving energy and water and eliminating mercury from medical equipment, such as thermometers and blood pressure cuffs.

But the movement isn’t just about protecting the planet, says Sanford Smith, senior vice president of real estate and facilities at Hoag Hospital in Newport Beach, Calif. “Along with doing the obvious things, like improving recycling, we’re also trying to create a holistic environment that enhances healing by upgrad- ing patient comfort and safety.”

This includes a green renovation of Hoag’s Irvine facility. “Indoor air quality is very important in a hos- pital, so we’re using materials and furniture with low or no VOCs”—volatile organic compounds that emit potentially harmful vapors—adds Smith. Hospital rooms are also being reconfigured to increase natural daylight. “Not only does that save energy, but we be- lieve it makes people feel better.”

High-Tech Healing

Continued

images of the body’s interior. Robotic surgery can be used for conditions as diverse as bladder cancer, coro- nary artery disease and gynecological disorders. “Because this technique is so precise, there’s less blood loss, reducing the need for transfusions,” says James Porter, M.D., director of surgical robotics. “And patients recover faster, with less pain.” Dr. Porter speaks from first-hand experience. When he developed prostate cancer in 2000, at age 43, he was treated with robotic surgery. “I was back at work in a week, without any complications. That made me even more of a be- liever in the benefits of this high-tech surgery.”

An Electronic Safety Net

In critical-medication errors, healthcare facilities are turning to “closed-loop” systems, with safeguards at each step of the prescribing process. Here’s how it works at Overlook Hospital in Summit, N.J. Doctors enter orders on computers that check the patient’s history and history on wireless smart carts and match the barcode label on the medication to the patient’s wristband. And all the lab re- 

results are right at their fingertips on PC monitors.”

Not only has the error rate dropped to less than one percent since the sys-

tem was launched in 2001, but critically ill patients are treated faster, Castle adds. “We used to run into problems with STAT (urgent) medications, which are supposed to be given within 30 minutes, because the medical process took up to two hours. Now we have a 15-minute turnaround, which is a huge improvement in patient safety.”

High-Tech Training

A newly licensed nurse at Duke University Health System, in Durham, N.C., found her patient con- 

sciousness, with clammy skin, slow breathing and a rapid pulse. The patient went into cardiac arrest, requiring CPR. However, the “patient” wasn’t human; it was a life-sized medical manikin (the preferred spelling to
distinguish these high-tech devices from department store mannequins). Known as SimMan 3G, it can be used for simulations of real-life emergencies, where every second counts to save lives.

Lise Collier Civil has won 16 awards for medical journalism and is a past president of the American Society of Journalists and Authors. Her articles have appeared in Tens, Fitness and O. The Opal Magazine.

State-of-the-art technology helps doctors quickly zero in on the right treatment and can shorten hospital stays.

**Hospitals are also serving healthier meals featuring fresh, season-
al fruits and vegetables and antibiotic-free meat. Some also grow their own herbs for flavoring, use napkins and paper plates that can be com-
postable after use or even have hoppers on the grounds for a sunny honey harvest. Another innovation is cooking food in wa-
derful foods from nearby suppliers, meal costs have dropped by 20

percent. To combat the obesity epidemic and encourage healthy eating, the hospital now has an on-prem-
ises farmers market. Due to tasteable meals, says Diane limite, director, nutrition services, “patient satisfaction
ratings just hit all-time high.”

The eco-trend is also influencing how hospitals scrub and disinfect. Healthcare facilities and schools nationwide participate in Greening the Cleaning, a nonprofit line of eco-friendly cleaners. “The first thing visitors notice is that the harsh chemical smell is gone,” says Diederik Juma, who spearheaded the pro-
gram at her Environmental Center for Pediatric Oncolo-
y at Hackensack University Medical Center, in New Jersey. “It’s just common sense that fresher air and reducing environmental toxins aid in healing.”

**—L.C.C.

**At Covidien, our commitment to positive outcomes begins with helping to ensure patients’ well-being in the hospital. In fact, our portfolio of medical devices has already yielded advances in patient safety; surgical procedures and recovery times. To learn more about our positive benefits in the healthcare industry, visit covidien.com/successstories.

**"We need a system that allows nurses to gauge the patient’s condition, especially at the bedside,“ says anesthesiologist and critical care physician Karen Imrie, director, nutrition services, “patient satisfaction
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