America’s Best HOSPITALS

Exclusive Rankings

The Nation’s Top Medical Centers in 17 Specialties, including Heart Disease, Cancer, Pediatrics, and Ophthalmology

Andre T. Creese (left), medical director, McLeod Regional Medical Center Emergency Department; Daniel J. Fox, anesthesiologist; nurse Angela Lowder, member of the rapid-response team

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Before 1999, dying in a hospital because of shoddy care was a real enough possibility, but only the paranoid or pessimistic gave it much thought. Then came To Err Is Human, a j’accuse-style thunderbolt from the prestigious Institute of Medicine. Medical errors in hospitals, charged the institute’s report, kill at least 44,000 and perhaps as many as 98,000 patients a year. On its heels, other studies found widespread failure to heed well-known “best practices” that could save lives. Horrific tales of individuals betrayed by mistakes and inattention popped up in the news like poisonous mushrooms. Medical centers sudden-
ly were seen as death traps.

In truth, no one knows now, or knew with any precision in 1999, how many hospital patients die from errors and inadequate care. Even agreement on the meaning of “error” is elusive—should deaths caused by substandard care be counted along with deaths caused by mistakes?

It’s also important to maintain a sense of perspective. Suppose the institute’s higher estimate is right and is rounded up to 100,000. Here’s what it means to you when that number is placed alongside total yearly hospital admissions of about 37 million: The arithmetic works out to roughly one death from medical errors for every 370 admissions. Or, to put it another way: A patient undergoing major surgery probably faces a risk of dying, if everything goes right, of 2 percent or more. Including the worst-case possibility of death due to a mistake adds about one quarter of 1 percentage point to this risk.

Careless care. This view provides no comfort, of course, if you are a friend or family member of someone who needlessly died in a hospital. And although the IOM report called for an all-out improvement effort, it just hasn’t happened. Hospitals in the wealthiest nation on the planet are still killing tens of thousands of people every year by infecting them after surgery, mixing up their medications, treating them with entrenched, outdated medical practices, or reacting too slowly when they show danger signs.

Robert Wachter, a long-time safety and quality expert and chief of the medical service at the University of California, San Francisco Medical Center, calls it an epidemic that most hospitals still don’t take seriously until a high-profile disaster occurs on their watch. “Show me a medical organization,” he says, “that really has walked the walk when it comes to safety and has not [itself] made a terrible error.”

There’s been plenty of talk about safety, and even meaningful activity. The federal Centers for Medicare and Medicaid Services began posting performance numbers showing how well more than 4,200 hospitals comply with basic guidelines for treating heart attack, heart failure, and pneumonia (www.HospitalCompare.hhs.gov). The accrediting body for hospitals, the Joint Commission for Accreditation of Healthcare Organizations, has added new patient safety requirements year by year. Safety and quality initiatives pioneered by organizations such as the Leapfrog Group and the National Quality Forum have been hammered out.

But if these efforts have had an effect beyond a handful of medical centers, it’s hard to see. “It’s a question of leadership,” says Donald Berwick, president and chief executive of the Institute for Healthcare Improvement in Cam-
bridge, Mass. Since 1991—nearly a decade before the Institute of Medicine’s error report—he has proselytized for grassroots-level quality improvements in hospitals. “They must do better. ‘Trying harder’ is the world’s worst plan.”

So last December, at an annual gathering of hospital and public and private healthcare leaders who went to Orlando to exchange ideas on safety and quality improvements, Berwick took the microphone. “I’m losing my patience,” he announced, and then offered a challenge: Join IHI in an ambitious initiative called the 100K Lives Campaign. Its goal is to save 100,000 hospital patients’ lives by 9 a.m. on June 14, 2006, exactly 18 months from Berwick’s call to arms, by introducing six changes in hospital procedures. Each change addresses a problem, such as deaths from infections following surgery, and presents an arsenal of weapons to fight it, such as tighter timing of antibiotic doses before surgery.

Making real changes. Most of the proposed initiatives are “tried and true,” says JCAHO President Dennis O’Leary, whose group worked closely with IHI to select and refine the measures. Reducing deaths from medication errors, for instance, is already a JCAHO patient safety goal, and the measures that reduce deaths in heart-attack patients are the same ones now being tracked on the CMS Hospital Compare site. But there are some new ideas, too. “Rapid-response teams,” called when a patient seems to be losing ground but isn’t yet a true emergency, is an innovative concept for U.S. hospitals.

Joining the 100K project involves no fee, and paperwork is minimal. Still, some might be reluctant to sign on. Many of the measures cost little to put in place, but others, such as reducing medication errors, can involve expensive new technology.

Yet many hospitals actually jumped at this opportunity to make these lifesaving changes. By June’s end, more than 2,300 were on board—more than enough to meet the 100,000 goal. If all 6,000-some U.S. hospitals joined, says IHI, 183,000 lives could be saved every year.

Two early adopters were Hackensack University Medical Center, a large teaching hospital in northern New Jersey with nearly 700 beds, and McLeod Regional Medical Center, a 460-bed community hospital in Florence, a small city in the northeast corner of South Carolina. The following pages describe the six parts of the 100K initiative and how these two hospitals are meshing them into the hospital routine.
The 100K campaign is pinning much of its hopes on specialized teams that can rush to the bedside when a nurse or other caregiver is worried about a patient but there’s no obvious crisis. One or more vital signs might have teetered out of the usual range, or the patient suddenly seems confused or delirious. Sometimes the warning signs might be more subtle, a collection of small changes that only an observant nurse would pick up and fret over—slight pallor, sweaty hands, an unfocused stare.

Enough to be concerned.

The point of the roving squads is that most hospitalized patients who have an unexpected heart attack or other potentially fatal event send up some kind of early flag. Their breathing or their pulse rate might speed up or slow down considerably, for example. These telltale signs usually extend over a period of several hours or more before there’s an emergency—which by then is likely to result in death. If a nurse could pick up the troublesome indications and summon a team skilled at recognizing and treating patients who may be about to decline, many of those deaths could be avoided.

The teams were pioneered in the late 1980s in Australia, where they are called medical emergency teams, or METs. They are credited with pushing down the number of unanticipated cardiac arrests and hospitals’ overall death rate. At Dandenong Hospital, a teaching center in Australia, cardiac arrests fell by half, and the death rate in patients who had an arrest fell from 77 percent to 55 percent.

Now some U.S. hospitals are using or investigating the teams, but the concept is still a bold one for most places. By making it part of the 100K initiative (where the team is called a rapid-response team, or RRT), Donald Berwick hopes to give the idea a boost. It is symptomatic of his self-proclaimed impatience. “That’s where Don and IHI went furthest out on a limb,” says Robert Wachter. He considers the evidence supporting the use of RRTs “decent,” but hardly overwhelming. Yet Berwick’s influence is so strong, says Wachter, that his backing of RRTs is just shy of the hospital accrediting commission calling for them.

There’s little doubt that hospitals will come at RRTs in very different ways. At all hospitals, nurses are free to call the team for no reason other than worry. “We’ve had patients with silent MIs,” says Susan Abramson, a nurse in Hackensack’s orthopedic unit, describing myocardial infarctions, or heart attacks, that lack such classic symptoms as crushing chest pain. “They are sweaty, gray. You just know.”

But Hackensack nurses also can consider a list of clinical criteria for blood
pressure, heart rate, and other vital signs. McLeod nurses have nothing beyond concern to guide them. “I do think it would be better if we had numbers to go by,” says Terri Whitfield, a veteran nurse on a medical floor. “It’s vague.” Even so, she likes the RRT concept. “It’s a wonderful idea, especially on the night shift,” she says. “You know you’re not alone—there’s always help.”

**Bumps ahead.** “It took us about six years before we got the system quite right and tuned up,” cautions Ken Hillman, professor of intensive care at Australia’s University of New South Wales in Sydney and one of the prime movers in spreading the idea in that country. A sign of bumps that still remain even in Australia came to light last month.

A study led by Hillman himself, published in the *Lancet,* showed no difference in unexpected deaths, heart attacks, and other key indicators between one group of Australian hospitals with METs and another group without. He now suspects that the four-month training period at the MET hospitals wasn’t long enough. A possible tip-off was that the teams weren’t called nearly as often as they were at hospitals with a longer history. And that suggests that hospitals elsewhere should introduce the teams carefully and patiently.

**Any person in an intensive care unit, or ICU, is very sick indeed.** Many patients in medical ICUs (as distinguished from surgical ICUs, where patients spend time after an operation) are on mechanical ventilators to help them breathe, and up to 15 percent of them develop pneumonia from one of the many bugs that roam hospitals. The relationship is so strong that it has a name: VAP, or ventilator-associated pneumonia.

VAP is a killer, the No. 1 cause of death from hospital-acquired infections. The VAP death rate is 44 percent higher than it is for ventilated ICU patients who don’t get pneumonia. Practices that reduce the toll have been published, but hospitals have been slow to adopt them. IHI packaged four of the measures into a “bundle” and made VAP reduction part of the 100K campaign.

**At Hackensack, medical ICU nurse-manager Courtney Cook’s first response to the bundle was, “Are you kidding me? We do this stuff all the time.” But after thinking about it, “I realized we didn’t do all of the things all of the time.”** The four components of the VAP-reduction program are deceptively simple:

- **Raise the head of the bed.** Possibly it’s because a patient is less likely to inhale stomach contents or mucus. Or because it helps the patient breathe more deeply. Whatever the reason, putting the head of the bed at an angle of 30 to 45 degrees cuts VAP—by nearly 80 percent in one trial.

- **Impose a “sedation vacation” as part of ventilator weaning.** Ventilated patients are generally sedated to keep them free from pain (and so they won’t try to remove the ventilator). To see if they can breathe on their own, the ventilator is...
removed every day and sedation lightened or halted briefly. “Right now we have three patients on ventilators out of 20 beds,” reported Hackensack’s Joe Capone, supervisor of the ICU’s respiratory therapists, in late June. “Before, we probably would have had 12.”

Medicate to prevent stomach ulcers. These anti-ulcer drugs lower stomach acidity, a particular benefit to ventilated patients because the more acidity, the worse the consequences if a nauseated patient inhales some stomach contents into the lungs.

Prevent clots in leg veins. Deep vein thrombosis, or DVT, poses a risk that a clot will travel from a vein in the leg to the lungs, heart, or brain and is more common in bedridden patients. Steps to prevent DVT, such as blood thinners and compression sleeves, also seem to lower the risk of VAP.

How well does this collection of measures work? The last case of VAP at McLeod, says Mark Williams, nursing director of the medical ICU, was logged on July 26, 2004.

‘YOU REALLY LISTEN’

Every winter, when Donald Berwick isn’t busy reforming healthcare in his Cambridge, Mass., office, he’s perfecting his cross-country skiing technique out in New Hampshire’s backwoods. Tweaking the angle of his kick or his grip on the ski poles nibbles away a few seconds here and there. “Tiny changes can make the difference between whether you’re grunting and sweating or flying up the hill,” he says.

Berwick sees the world as something that could and should be perfected—including healthcare. The Institute for Healthcare Improvement, which he cofounded in 1991, spends much of its time identifying small, simple modifications that pay off in lower costs and fewer deaths and injuries.

Berwick, now age 58, gained a reputation at Harvard Medical School in the 1960s for helping low-income neighborhood residents find healthcare. Later, as a pediatrician, he nearly crawled inside his young patients to figure out what was wrong with them.

“When you’re doing medicine properly, you sit down, you focus on the patient in front of you, and you really, really listen,” says Berwick, quoting a former teacher.

In the mid-1980s, Berwick and fellow pediatrician Paul Batalden gathered a group of friends, sometimes on Batalden’s birthday, to talk about improving healthcare. The seeds of IHI were sown at the “birthday club” meetings. Most attendees became board members.

Single-minded. Discussing healthcare reform at birthday celebrations is in character for Berwick and his band, who speak with the zeal of radicals. Even on vacation, say friends, conversations invariably return to healthcare.

Berwick’s curiosity and open mind are renowned, whether he is picking the brains of Toyota engineers for tips on workflow or coteaching a “Quality of Healthcare in America” course to Harvard undergrads. “I had some minor quibble with an argument he made but wasn’t going to come out and say so,” says former student David Gellis. “He was able to see where I was going and encouraged me to ask my question. I was blown away by that."

Soft-spoken and approachable, Berwick is also known for funny and moving anecdotes in his speeches and presentations and for humanizing his theories. He is also very frustrated with the slow pace of healthcare reform. His father, his wife, and Berwick himself have each experienced medical fiascoes, and each has starred in his talks.

Take Berwick’s sore right knee. After a soccer injury in medical school, a doctor performed a now-discredited procedure on Berwick that eventually left him with osteoarthritis. The bones of his knee rub together, most likely because of the surgery. Last January, Berwick half-humorously issued a public “request for bids” to the healthcare system at large to fix his knee. First on his list of six simple requests: “Don’t kill me.”

Berwick wants high-quality care for everyone, and he wants it now. A friend once said in a speech that trying to make quick changes to swollen public institutions such as healthcare is like incubating a chicken egg with a blowtorch: You get a burned mess, not a baby chick. But Berwick won’t back off. “I keep seeing the toll,” he says. “I’m close enough to watch people get hurt. We need to turn the blowtorch on when it will help.” —Cory Hatch
Avoiding Heartbreak

**PROBLEM:** Deaths in heart attack patients after they are admitted

**PROPOSAL:** Provide aspirin and a beta blocker early and at discharge; other measures

**POSSIBLE LIVES SAVED:** 10,000

When a likely heart attack patient shows up at a good-sized hospital, the medical staff swings into action as if the curtain has risen on a carefully choreographed dance. That’s not so far from the truth. They’ve seen lots of heart attacks, and each doctor, nurse, and technician plays a practiced role—taking a history, wiring up the patient to a 12-lead electrocardiograph that tracks heart rhythms and other activity, drawing blood for tests to help confirm a heart attack, starting an IV. Clinical guidelines map out each one of these steps in detail.

So it may seem like needless sermonizing for the 100K initiative to call for seven basic elements of heart attack care whose value no one seriously disputes: aspirin and a beta blocker on arrival, followed by prescriptions for both, plus either an ACE inhibitor or ARB medication (both are blood-pressure drugs) upon discharge; a clot buster within 30 minutes of arrival or a procedure to open blocked coronary arteries within two hours. Oh, yes, and counseling for smokers. These elements are, in fact, identical to those for which hospitals report their compliance to CMS for posting on the Hospital Compare website.

**Prevention.** Such measures are accepted not just because some of them help people survive a heart attack. Someone who has had a heart attack is vulnerable to another one in the days or weeks that follow, and studies indicate that the recommended medications can keep that from happening, too. Beta blockers, for example, may cut the risk of death by 13 percent the week after a heart attack and by 23 percent in the months after leaving the hospital.

Considering the well-documented benefits of these guidelines, one would assume all hospitals would obey them. But many don’t. A large Rand study pub-

**AFTER AN ATTACK.** Medical staff members at McLeod carefully check a heart attack patient for any dangerous arterial blockages.
lished in 2003, based on a review of thousands of medical records of individuals around the country, found that within two hours of entering the hospital, only 61 percent of heart attack patients got aspirin; just 42 percent were given a beta blocker.

A team from Hackensack’s emergency department, cardiac service, and other parts of the hospital succeeded in boosting its performance dramatically when they started to follow the guidelines rigorously. In the first quarter of 2003, heart attack patients were receiving all seven services about 73 percent of the time. By the fourth quarter of the year, compliance had risen to 94 percent (it has stayed high through the most recent figures), and the hospital’s death rate for heart attack patients had fallen from 7 percent to 5 percent.

McLeod made a similar commitment, and its numbers, too, have improved significantly.

A trip to the Hospital Compare site is a revelation. The posted data suggest that at one prominent U.S. heart center, 16 of 174 heart attack patients didn’t get a beta blocker on arrival, and 20 of 140 patients didn’t get an ACE inhibitor. At another hospital with considerable expertise but a far lower public profile, virtually every patient was appropriately treated.

Walk into an intensive care unit and you’re likely to see many of the patients sporting a catheter—a tube about the thickness of spaghetti. The catheters enter their bodies beneath the collarbone and disappear into a blood vessel called the subclavian vein. The catheter is called a central line or central venous line. It could be in place because a patient needs to have large slugs of medications administered regularly or is taking powerful drugs that could harm blood vessels if given intravenously. A central line is a very efficient way to pump antibiotics and other lifesaving drugs directly into the bloodstream.

Unfortunately, inserting a central line is complex and takes time, during which deadly germs can enter the break in the skin. And the line stays in place for some days, during which microbes can take the same direct route—just as a surgical incision can be an open door, and with the same deadly consequences. Tens of thousands of patients—by some calculations more than 300,000—pick up bloodstream infections each year simply by being in the germy hospital environment. And 70 percent of those blood infections occur in patients with a central line, according to a surveillance system that tracks hospital-borne infections. IHII estimates the yearly death toll from blood infections related to catheters to be as high as 28,000.

Washed up. IHII’s response in the 100K campaign is a bundle of measures that start with treating the insertion of a line as if it were surgery. That means draping patients with a sterile sheet, and sterile gloves, gown, and mask for the medical team. Even the type of antiseptic used to disinfect the skin is important; IHII specifies chlorhexidine.

Every contact by a caregiver with a central-line patient, moreover, must be with clean hands. Traditionally, that has meant heading to a sink for a round of soap and water. Doctors and nurses, unfortunately, tend to be something less than diligent about hand washing. At one hospital, caregivers were observed and asked how faithfully they and their
coworkers wash their hands after touching a patient. They do so 85 percent of the time for themselves, they responded, but their coworkers comply only 51 percent of the time. In fact, according to the observers, the caregivers washed up only 28 percent of the time.

It’s no surprise. Hand washing takes 30 seconds to 2 minutes, according to studies. Multiply that by a large number of patients over the course of a day. And caregivers frequently forget as they hurry from patient to patient, distracted by interruptions. In 2002, the Centers for Disease Control and Prevention issued guidelines calling for use of alcohol-based rubs, which require only 10 to 30 seconds to work in, except when the hands are visibly dirty. Both Hackensack and McLeod have installed large numbers of dispensers of alcohol-based gel.

A hospital is a risky place for people who have had surgery. No matter how much antibacterial solution is painted on before the first cut, opening the body invites lurking microbes. Infections at the surgery site complicate an estimated 780,000 operations a year, or more than 1 in every 40 procedures. For abdominal surgery, the likelihood is as high as 1 in 5. And the complications are tough to treat. Infected patients are two to three times more likely to die and are hospitalized an average of seven days longer than uninfected patients who had the same operation.

Even before the 100K campaign got underway, IHI had been working with a group of 56 hospitals on strategies to lower the rate of surgical-site infections. Results of the yearlong effort, published last month in the American Journal of Surgery, showed a reduction in such infections of more than one fourth.

But Berwick didn’t need to wait for the study to end. Research published as far back as the early 1960s had laid out an effective arsenal of weapons. The 100K campaign focuses on four.

Time antibiotics better. Surgeons understand that giving an antibiotic in the 60 minutes before surgery lowers the infection rate. But getting it into patients within the 60-minute window happens only about 56 percent of the time, a February study in the Archives of Surgery found. “It’s often started in another place, it’s done running in 20 to 30 minutes, and then there’s a delay,” says lead author Dale Bratzler. “Typically the antibiotic loses half its potency in two to three hours, so if there’s a several-hour delay, the patient is a candidate for infection by the time he’s rolled into the
or.” The answer: Don’t start the antibiotic until the patient enters the operating room. At Hackensack, just before the scalpel comes down, the surgeon reads a checklist to make sure this is exactly what has happened.

Stopping the antibiotic within 24 hours after surgery is also a 100K stipulation because it may help combat antibiotic-resistant bugs that have become a major headache at hospitals.

**Control blood sugar during heart surgery.** Many studies focusing on cardiovascular surgery have found that patients whose blood sugar rises by more than a certain amount around the time of surgery are much more likely to die or suffer abnormal heart rhythms or other complications in the following month than are patients whose blood sugar is kept under control.

**Rethink the razor.** In years past, patients often were shaved the night before surgery. The razor left the skin raw and open to infection. Existing guidelines, noted by IHI, suggest that hair usually doesn’t need to be removed at all. If it is, only remove it just before surgery—and use electric clippers, not razors. Hackensack leaves the decision to individual surgeons. McLeod threw out razors years ago.

**Keep patients warm.** Let a surgery patient get too cold and the risk of postsurgical infection rises. IHI’s suggestions include cranking up the temperature in the OR. Hackensack uses an IV warmer, another IHI proposal, to raise the temperature of fluids before infusing them.

**Getting Meds Right**

**PROBLEM:** Medication errors  
**PROPOSAL:** Review all drugs at admission and whenever a patient is moved to a new setting  
**POSSIBLE LIVES SAVED:** 2,000

Medication errors get considerable press. And with good reason. Such mistakes kill thousands of hospital patients—7,000 every year, according to the 1999 Institute of Medicine report—and the solution seems so obvious: Put everything on computers. Make doctors enter all drug orders using the hospital’s computer network. Add some bar coding and bar-code scanning to make sure patient and drug match and the dose is right, and you’re home free. No scribbles to decipher, no uncertainty about giving patients the wrong drugs. No more adverse drug events (ADE), the jargon term for drug goofs.

The trouble with this high-tech answer is that first, it costs millions of dollars, and second, as laid out in a study published in May in the Archives of Internal Medicine, it doesn’t necessarily work very well. When researchers examined a sample of patient records at a teaching hospital in Salt Lake City that relies heavily on computers for processing medications, they found significant ADEs, such as drug interactions, in over half the admissions.

For the 100K campaign, IHI decided to focus on transition points, when patients move from one setting to another—from home to hospital, operating room to surgical intensive-care unit, patient room to a lab for tests, and ultimately hospital to home. Nearly half of medication errors have been found to occur at these points.

So if hospitalization could start with a clean, accurate list of a patient’s medications, if the list could be updated continually as needed, if it moved with the patient as if attached by a chain, and if the medications she was told to take when discharged had been carefully reviewed by her physician, many errors could be avoided. IHI calls this ongoing verification process “medication reconciliation.”

Hackensack’s Regina Berman, di-
rector of performance improvement, says that of the six 100K initiatives, this one is the hardest to accomplish. “Patients come in with different conditions—they might be barely conscious, with limited ability to remember the drugs they’re taking,” Berman says. (This makes a strong case for carrying a list of current medications and their dosages in your wallet or purse at all times.) The hospital now details nurses to make calls to a patient’s pharmacy if necessary. Knowing that they’re still not going to get a complete initial drug list for every patient, however, the hospital has elected to concentrate on what happens during the stay. Whenever a drug is started—or stopped—the action is entered into the system, generating a new drug list, and that updated list always travels with the patient. The rate of ADEs has dropped from 3.5 per 1,000 doses at the beginning of 2003 to 1 per 1,000 for the first quarter of 2005.

McLeod has a pharmacist review patients’ medications when they are admitted. And every day, whether or not there has been a medication change, a fresh list is printed out and placed at the front of the patient chart. Doctor and nurses can also download charts into their handheld computers.

What can patients do?” is one of the shortest chapters in *Internal Bleeding*, a riveting account of the impact of medical mistakes in hospitals. That’s because coauthor Robert Wachter doesn’t believe they can do much. “The notion that patients can protect themselves is a false reassurance,” says the noted safety expert of the endless lists of tips and advice published elsewhere. “There’s too much happening behind the curtain for you to catch.”

Still, he does offer advice, such as: Slip-ups are more likely when you’re moved from one part of the hospital to another, so always carry a list of your medications while hospitalized.

There’s also a lesson in the care that Wachter and his wife took to line up friends and family to be at her side for every minute of the 48 hours after her planned surgery to donate a kidney to her best friend eight months ago. It’s a sign of the times that the Joint Commission on Accreditation of Healthcare Organizations, the accrediting body for hospitals, considers that a good idea. Its “Speak Up” brochure (www.jcicpa tientsafety.org) counsels patients to have a trusted family member or friend with them—24 hours a day, for the entire stay. –A.C.