



**T H I S**

**M A C H I N E**

**S A V E S**

**L I V E S**

**They improve care and cut costs. That's why Obama is spending billions on them. Yet electronic health records continue to cause more agony than relief in the U.S.**

**SO**

**WHY**

**DON'T MORE**

**HOSPITALS**

**USE**

**IT?**

**By Devin Leonard and John Tozzi**

When the patient arrived, he started twitching uncontrollably. The elderly gentleman had been brought by worried family members to see a specialist at the Kaiser Permanente Santa Clara Medical Center in California late last year. The doctor there thought the man might be having an epileptic seizure—only he soon stopped twitching and, a minute later, seemed fine. Unsure of what to do next, the outpatient doctor called James Lin, chief of the hospital's emergency department. Should he send the man to neurology, as he would an epileptic patient, or to emergency?

Lin, a fast-talking 38-year-old with brush-cut hair and freckles, had his colleague wait while he looked up the patient's records on the hospital's electronic health record (EHR) system. In an instant, he saw that the man had a history of twitching episodes from which he recovered quickly; usually people suffering epileptic seizures tend to remain confused and disoriented afterward. "Send him over to me right away," Lin said. Minutes later, Lin put the patient on a cardiac monitor and confirmed that the man's brain wasn't the source of his medical issues. He watched as the patient's heart rate slowed. There was a long pause between beats, during which the man started twitching again. He was at risk of cardiac arrest. Lin transferred him to the intensive care unit, where he was outfitted with a pacemaker in a matter of hours. Lin says the man might have died if he had gone to the neurology clinic. The doctors there don't have cardiac monitors and might not have diagnosed his condition in time.

Outcomes like these, Lin says, are precisely what Kaiser's EHR system was designed for. Purchased from Epic Systems, a Verona (Wis.) company that's one of the pioneers of electronic health records in the U.S., it cost \$4 billion and took five years to get up and running. The system, which links Kaiser's 37 hospitals, 15,857 physicians, and 9 million members, enables Lin and his fellow doctors to routinely save lives, he says. As he walks through his bustling emergency ward, weaving his way around patients in wheelchairs and on gurneys, he points out the PCs on wheeled platforms that doctors and nurses use to tap into the Epic databases. They look a bit like Segways without the ride-along platform. "We used to call them COWs, which was short for 'computers on wheels,'" Lin says. "But if we say we are going to push the COW in here, it doesn't sound so good. So now we call them WOWs. That means 'workstations on wheels.'"

When people in health care talk about the promise of digital medical records, they often point to Kaiser Permanente. The Epic system is integral to America's largest nonprofit health maintenance organization. The Oakland-based operation's doctors use it for everything from scheduling appointments to ordering lab results. Kaiser's members seem to like it, too. They can log into the system, check their medical records, and correspond with doctors via Epic's secure e-mail system. "I have patients who send me pictures of their Hawaii vacations," says Todd Dray, a Kaiser head and neck surgeon in Santa Clara. "I'm like, 'That's awesome. You know this is going into your electronic medical record?'"

Kaiser had been gradually moving away from paper since the 1960s, but it decided to go all the way in 2003. It was a grueling process. Doctors initially objected to the conversion. There were system outages and a period of low productivity as the staff got up to speed. Today, however, Kaiser has the largest nongovernmental digital depository of medical records in the world, and the insurer says it has used this data to improve care. In an internal study, Kaiser found that the rate of heart attacks among 46,000 patients in Northern California who were 30 years and older has declined by 24 percent. Kaiser has also reduced mortality rates for its hospital patients who contract sepsis, a dangerous infectious disease, by 40 percent since 2008. Robert Pearl, executive director of Kaiser's Permanente Medical Group, says the EHR had everything to do with it. "We were able to go into our databases and understand the progression of this disease and recognize why early intervention is so crucial," he says.

Yet when Kaiser has to deal with other health-care groups, it confronts the same problems as the rest of the profession. For instance, it has a large clinic in Denver that works closely with two non-Kaiser hospitals. A few years ago, those hospitals decided to buy an EHR system.

"We were a big part of their business," says Jack Cochran, a plastic surgeon who is executive director of the Permanente Federation, which oversees Kaiser's physicians. "We thought they should choose Epic. They said, 'We don't think we should.'" Sure enough, when the hospitals installed their software, Kaiser couldn't communicate with them electronically. Thankfully, the hospitals had fax machines.

The case for EHR has long been compelling: It can help recognize and contain epidemics, speed claims processing, and, of course, cut costs. The U.S. is spending \$2.7 trillion annually on health care, a number that's approaching 18 percent of gross domestic product. The size of the problem is spurring a philosophical change, from a system where doctors are paid for the volumes of procedures they complete to one in which they are paid for keeping their patients healthy.

It starts, though, with the physicians, and the pitch goes something like this: Liberated from paper charts, doctors will be able to search records more rapidly and share patient data with specialists or doctors in other locations, should a patient move or fall ill away from home. And physicians will no longer have to write prescriptions by hand. They will do it on an automated system that dispatches orders to the pharmacy and keeps track of dosage and refills. There will be fewer redundant tests as results are shared by labs. Emergency room doctors will log on to computerized databases and find out the results of a patient's recent radiology test rather than reflexively subject them to another.

EHR evangelists say some of the more advanced systems will help doctors think by giving them digital prompts, such as warnings not to prescribe the wrong medication or suggestions about the latest treatments. "No doctor can keep it all in his head anymore," says Ezekiel Emanuel, a former White House health-care policy adviser who is now at the Perelman School of Medicine at the University of Pennsylvania. "They will help you put things together, give you reminders, and also analyze large amounts of data that even very smart people aren't going to be able to keep up with anymore."

Countries with national health-care systems such as Denmark, Sweden, and New Zealand have largely dispensed with records on paper. According to a study by the nonprofit Commonwealth Fund, Danish doctors reported in the late 1990s that they were saving 30 minutes a day by prescribing drugs and ordering lab reports electronically. A 2010 study by the same organization said the annual salaries of New Zealand's family doctors had risen 50 percent in five years, thanks to increased funding and their prolific use of EHRs.

In the U.S., things are different. Some providers, such as Kaiser, the Mayo Clinic, and, interestingly, the Veterans Administration, have installed sophisticated data

Lin finds EHR data invaluable in the ER



# COUNTRIES WITH NATIONAL HEALTH CARE HAVE LARGELY DISPENSED WITH PAPER RECORDS

PREVIOUS SPREAD AND TOP: PHOTOGRAPH BY JAKE STANGEL FOR BLOOMBERG BUSINESSWEEK; BOTTOM: PHOTOGRAPH BY GRANT CORNETT FOR BLOOMBERG BUSINESSWEEK



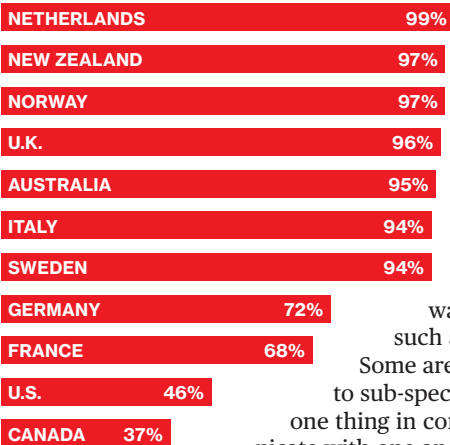




systems. For the most part, though, American doctors have resisted. They worry about the privacy of their patients' records—and that plaintiffs' attorneys will use the computerized data against them in malpractice suits. And they resent that they're expected to shoulder the cost of new technology that might help their patients or insurance companies, but would do little for their own bottom lines.

Peter Ehrnstrom, a 48-year-old dermatologist in Anchorage, Alaska, gets the potential of EHR, and is reluctantly considering investing in a system. At the same time, he's convinced his five-member practice might not recover from the transition. He says it's typical for smaller physician-owned practices to lose 50 percent of their productivity while they get up to speed on their new EHR systems. Ehrnstrom says it takes him longer to type notes than to dash them off by hand. "If you add literally one minute per patient to my work, you've added 40 minutes to my day," he says. "If you add five minutes per patient, you have now certainly just hit me with a 20 to 30 percent productivity loss." Charles Cutler, an internist in Norristown, Pa., has done similar back-of-the-envelope calculations. "I don't think we're going to come out on the other side

### Practices with electronic medical records\*



\*AS OF 2009  
DATA: COMMONWEALTH FUND

of this endeavor financially better than the old system of maintaining paper records," he says.

The difference between the state-run approach and the market-driven one is stark. There are 551 certified medical information software companies in the U.S. selling 1,137 software programs. Some are big, such as GE HealthCare and Epic.

Some are tiny niche players catering to sub-specialties. Their products have one thing in common: They don't communicate with one another. And this is by design. EHR vendors, which charge as much as \$25,000 per doctor for a system and a monthly subscription fee on top of that, want to lock out competitors while locking in customers for life.

In some ways these medical networks are developing as the cell-phone networks did; government has stepped back and let the market sort it all out, even if it means confusion. But at least a Verizon subscriber can talk to someone on AT&T. That hasn't been the case for EHR systems. A dermatologist using the latest system from one company can't send a patient's record to the allergist in the practice down the hall who uses a competing product. She has to print it out and deliver it by hand. The only way to meld the two systems electronically is to spend an additional \$10,000 on a custom software patch. Little wonder, then, that many doctors stick with paper.

In 2008 only 17 percent of U.S. physicians and 16 percent of American hospitals had advanced EHR technology.

The pace of change has quickened, however. Convinced that he wouldn't be able to fully insure the nation without

electronic health records, newly elected President Barack Obama persuaded Congress to support the EHR effort with substantial amounts of cash. In February 2009, he signed the redundantly titled Health Information Technology for Economic and Clinical Health Act, better known as the Hitech Act, which provides \$27 billion in financial incentives for digital health record use. Outpatient physicians can receive as much as \$44,000 from Medicare or \$63,000 from Medicaid over five years if they can demonstrate that they are using the technology to improve care. Hospitals can be reimbursed for millions of dollars if they qualify. Conversely, those who don't computerize will face monetary penalties starting in 2015.

"There's no question that the health IT incentive program as a whole has really jump-started," says Farzad Mostashari, the Obama administration's national coordinator for health information technology. "It addressed some of the big financial barriers that were in place." Mostashari says the administration has made "amazing" progress, doubling the number of doctors using basic computer systems to 34 percent in 2011—a number the Centers for Disease Control and Prevention confirms. Thirty-five percent of U.S. hospitals now use them, too. "By the end of this year," Mostashari predicts, "more than half of all American doctors and hospitals will have them."

The Hitech Act was part of the president's early economic stimulus effort. But it's perhaps better understood as a precursor to his health-care reform initiative. The Patient Protection and Affordable Care Act, which Obama signed in 2010, is famous for its requirement that all Americans obtain some form of insurance. However, the 2,700-page law also calls for doctors and hospitals to form so-called accountable care organizations; these will receive extra money from Medicare and Medicaid for keeping patients healthy rather than subjecting them to endless procedures. They are expected to do so by using computers. "You can't have the health-care reform act without electronic health records," says Judy Hanover, a health-care technology industry analyst at IDC.

The reform act is now in jeopardy. The U.S. Supreme Court might toss out the entire thing before the end of June. Beginning in March, the court heard arguments from small businesses and 26 states challenging the law's constitutionality, with some of the more conservative judges speaking publicly against the insurance requirement. But none of that will stop the Obama administration's campaign to put an electronic records system in every doctor's office, which is mandated by the previous, entirely different law.

To generate the efficiencies and savings Obama promises, the systems will have to communicate with each other better. Three years after the enactment of the Hitech Act, doctors and hospital administrators say there is little interoperability—the industry's term—among computerized health records. Some would rather lose Medicare funding than buy software now. But without the technology, it's difficult to see how the American health-care system can be restructured into something more affordable and equitable than the broken one that exists. "I think this is the last great hope for American medicine," says Kaiser's Pearl. "If we don't solve this problem now, we will slide backwards."

Each morning, Carlos Aguilar, an internal medicine specialist, brews himself a double espresso and drinks it in the car on his way to work at University Hospital in Cincinnati. Once he arrives, he can't afford any wasted moments. Most of Aguilar's patients are recovering on the hospital floor after a visit to the emergency room. It's his job to discharge as many as possible by noon so more beds become available. If he falls behind, things get chaotic. "Sometimes the emergency room is so full, there are people on stretchers in the hallway," he says. "It's like a war zone."

Aguilar's experience with software can feel like war, too. If he wants a radiology report, he has to log into a McKesson program on the PC in the doctors' lounge. If he wants to see an EKG, he has to use a program sold by GE. And if he wants to look at pathology reports, he has to boot up yet another program. "It's so complex," he says. "I have 10 different passwords." He carries them on a sheet of paper. But even with his crib sheet, he spends so much time wrestling with the University EHR system that his patients sometimes stay an



Mostashari is Obama's point man on digitizing health data

extra night. "The worst thing is, I have to change my passwords every three months," Aguilar says. "It drives me crazy."

At 37, Aguilar's been using computers for most of his 13-year career. He's not opposed to typing instead of writing, he just wishes the programs worked in concert. Nor is he the only doctor at University exasperated with the EHR system. Because of similar complications, surgeons at University's intensive care unit have refused to use the hospital's software to order medication. Others complain that they have to flip back and forth between the hospital's EHR system and the one used by primary-care doctors affiliated with University to make sure they don't accidentally prescribe drugs to patients who are allergic to them. Although GE makes both programs, they can't exchange this basic information. The upshot: After multiple computer system purchases, University Hospital uses paper charts for all the patients it treats. (GE says its newer products work better together.)

Finally, in February 2011, UC Health, the three-hospital chain that owns University Hospital, decided to mortgage its state-of-the-art hospital in suburban West Chester and invest the proceeds in an elaborate new EHR system that integrates all these functions. The new software is designed by Epic, the same company Kaiser uses; it goes live in the ambulatory departments of all three UC Health hospitals on July 10.

**HEALTH-CARE PROVIDERS BLAME SOFTWARE COMPANIES, WHICH BLAME THE GOVERNMENT**

As with previous upgrades, not everyone at University is enthusiastic. There has been a fair amount of griping among its 700 physicians about the mandatory eight hours of training. Two members of the ophthalmology department, one of whom is an internationally known eye tumor specialist, are refusing to participate. UC Health has decided not to make a stink about it. "Yes, we've got two docs who said 'Hell, no,'" concedes Robert Wones, vice president for medical affairs at University. "But everybody else is on board."

The point man for solving the interoperability dilemma is Mostashari. A Yale School of Medicine graduate who favors bow ties, Mostashari has his team drawing up a multistage process in which doctors and hospitals are required to use electronic medical records to exchange data, among other things, if they are to qualify for Hitech money. The process is called "meaningful use."

The first stage went into effect last year. It required providers to use their systems to prescribe drugs electronically. That was simple enough. "I have this chart in front of me," Mostashari boasts. "In March, 45 percent of doctors were e-prescribing. When the stimulus bill passed, the number was just a little bit over 5 percent." The next phase is scheduled to go into effect in 2014, and it's already contentious. Although the rules have yet to be finalized, they're likely to require doctors and hospitals to start exchanging considerable amounts of information with one another.

Lobbyists for doctors and hospitals are furious about the proposed changes. They note that most EHR systems are incapable of doing what Mostashari will probably require. "Due to physicians' limited ability to exchange data with other health-care partners, many of the proposed Stage 2 measures will require extensive manual data entry, which is not an efficient way of practicing medicine," AMA Board

Chairman-Elect Steven Sack said in a May press release.

Health-care providers blame the software industry. Software companies blame the government. They say they are waiting for Mostashari's office to come up with common standards so that digital systems can speak to each other. "There are a lot of different standards out there," laments Jan De Witte, chief executive officer of GE HealthCare IT. "But that's the issue. There are too many standards." Mostashari says he isn't interested in dictating EHR use the way Denmark did. (Denmark insists that all primary-care doctors use them.) Instead, he wants to forge a consensus between GE and Epic, technology companies such as Microsoft and Intel, insurers like Kaiser Permanente, health-care industry lobbies, and a myriad of additional interest groups. The process hasn't exactly been smooth. "There was a religious war about what lab messaging standard to use," Mostashari says, sighing. "We were like, Who cares? Pick one."

In the meantime, the Obama administration is counting on "health information exchanges" to provide regional connectivity. These in effect are partnerships that operate software patches similar to the ones EHR companies offer to their clients. But generally speaking, these hubs don't let their members exchange the level of information that Kaiser or Mayo Clinic do internally. "We are bringing all these little groups together, but we are going to have the same problem," says Marc Probst, chief information officer at Intermountain Health-care, a hospital chain based in Salt Lake City known for its advanced EHR system. And even if you can connect a bunch of doctors in Ohio, they still can't communicate with ones in New York.

The seemingly endless quest will continue even if Obama doesn't win a second term. Republican candidate Mitt Romney also believes digital records can help increase efficiency and lower health-care costs. But it's hard to see how if these systems ignore each other. Which is why some in the industry think the government should have resolved the standards issue before handing out billions of dollars to doctors and hospitals to buy software. Nevertheless, the purchasing spree Obama started continues. Hanover of IDC predicts that by 2015, annual spending on EHR will climb to \$3.8 billion.

Small practitioners such as Edward Rippel are trying to figure it out, too. Until six years ago, the only computer in his Hamden (Conn.) office was the PC he used to send personal e-mail. Then insurance companies started offering bonuses to physicians who kept patients healthy. Rippel, who is 49 years old, felt that he was providing that kind of care. Documenting it on spreadsheets would be too much work. So he invested \$50,000 in a digital record system developed by eClinicalWorks.

The conversion involved a laborious amount of data entry, but Rippel, who grew up in the Bronx and paid off his medical school loans by working at a federal prison, didn't relent. He spent his nights and weekends entering data for 4,000 patient files into the new system. When he was finished, he sold his chart racks to another doctor and converted the newfound space into a manager's office. Now, when a physician sends a paper copy of a patient's mammogram, Rippel's staff scans the document, enters the data into the computer file, and shreds the original.

When Rippel began using electronic records, 40 percent of his diabetic patients were in their target range for hemoglobin A1C levels, a standard measure of blood sugar. A year later, the number was 50 percent. Two years after that, it was 70 percent. One morning in June, he sits at his computer and pulls up a list of his diabetic patients. With a few keystrokes, he identifies those who are overdue for screening tests. Seconds later, he can e-mail them a reminder in English and Spanish.

The benefits of Rippel's technologic investment often end at his door. Only a small fraction of other doctors in the area use electronic records. One physician he knows has the same software, yet he only uses the digital calendar. Others with EHR systems find it easier to fax paperwork to Rippel than to send it electronically.

Even so, Rippel has no regrets. He says he made the \$50,000 back in two years because insurers raised his reimbursements. He looks forward to the day when every doctor is wired into a digital information network. "That's the dream, so to speak," he says. "It will very likely come true. I just don't know when." **B**

**Early adopter Rippel still has to fax data to other doctors**

# HEALTH-CARE PROVIDERS BLAME SOFTWARE COMPANIES, WHICH BLAME THE GOVERNMENT

