that fail to comply with the new electronic recordkeeping standards. Providers that cannot meet the standards by 2015 will have their Medicare and Medicaid reimbursements slowly reduced by 1 percent year until 2018, with further, more stringent penalties coming beyond that time if a sufficiently low number of providers are using electronic health records.

Electronic medical recordkeeping systems typically cost around $30,000 to $50,000 per doctor. Although stimulus money should eventually be enough to cover that cost, only a small amount of it is available up front. This would burden many providers, especially medical practices with fewer than four doctors and hospitals with fewer than 50 beds. The expenditure of overhauling recordkeeping systems represents a significant increase in the short-term budgets and workloads of health care providers—as much as 80 percent, according to Accenture. Smaller providers are also less likely to have done any preparatory work digitizing their records compared to their larger counterparts.

Implementing an EMR system also requires physicians and other health care workers to change the way they work. Answering patient phone calls, examining patients, and writing prescriptions will need to incorporate procedures for accessing and updating electronic medical records; paper-based records will have to be converted into electronic form, most likely with codes assigned for various treatment options and data structured to fit the record's format. Training can take up to 20 hours of a doctor's time, and doctors are extremely time-pressed. In order to get the system up and running, physicians themselves may have to enter some of the data, taking away time they could be spending with their patients.

A 2009 National Research Council study found that EMR systems were often poorly designed. For example, in one of these systems, it took eight mouse clicks on a digital record to locate patient information that fit easily on a single sheet of paper. Health care professionals will resist these systems if they add steps to their work flow and compound the frustration of performing required tasks. The Obama administration has worked on standards to improve EMR usability.

Many smaller practices and hospitals have balked at the transition to EMR systems for these reasons, but the evidence of systems in action suggests that the move may be well worth the effort if the systems are well designed. The most prominent example of electronic medical records in use today is the U.S. Veterans Affairs (VA) system of doctors and hospitals. The VA system switched to digital records years ago, and far exceeds the private sector and Medicare in quality of preventive services and chronic care. The 1,400 VA facilities use VistA, record-sharing software developed by the government that allows doctors and nurses to share patient history. A typical VistA record lists all of the patient's health problems; their weight and blood pressure since beginning treatment within the VA system; images of the patient's x-rays, lab results, and other test results; lists of medications; and reminders about upcoming appointments.

But VistA is more than a database; it also has many features that improve quality of care. For example, nurses scan tags for patients and medications to ensure that the correct dosages of medicines are going to the correct patients. This feature reduces medication errors, which is one of the most common and costly types of medical errors, and speeds up treatment as well. The system also generates automatic warnings based on specified criteria. It can notify providers if a patient's blood pressure goes over a certain level or if a patient is overdue for a regularly scheduled procedure like a flu shot or a cancer screening. Devices that measure patients' vital signs can automatically transmit their results to the VistA system, which automatically updates doctors at the first sign of trouble.

The results suggest that electronic records offer significant advantages to hospitals and patients alike. The 40,000 patients in the VA's in-home monitoring program reduced their hospital admissions by 25 percent and the length of their hospital stays by 20 percent. In addition, more patients receive necessary periodic treatments under VistA (from 27 percent to 83 percent for flu vaccines and from 34 percent to 84 percent for colon cancer screenings).

Patients also report that the process of being treated at the VA is effortless compared to paper-based providers. That's because instant processing of claims and payments are among the benefits of EMR systems. Insurance companies traditionally pay claims around two weeks after receiving them, despite quickly processing them soon after they are received; governmental regulations only require insurers to pay claims within 15 days of their receipt. Additionally, today's paper-based health care providers must assign the appropriate diagnostic codes and procedure codes to claims. Because there are thousands of these codes, the process is even slower, and most providers employ someone solely to perform this task. Electronic systems hold the promise of immediate processing, or real-time claims