Health care has undergone rapid changes in the digital era of medicine. The technological changes are nothing short of mind-boggling when we compare the imaging and diagnostic capabilities of today with those of 40 years ago. With computer technology, we can capture and analyze data faster than ever, enhancing diagnostic, educational, and research activities. Yet we still have not mastered the electronic medical record (EMR). When my father (a retired general surgeon) entered practice, his medical records were notes that he added to patient charts that were stored in his office and retrievable by patient name and birth date. He kept records of his patients’ medical conditions and improvement from treatments rendered. Despite the fact that only he and his nurse could interpret his writing, high-quality health care was provided and recorded. The advent of office dictation and transcription improved documentation considerably and the quality of medical record keeping immensely. Much of this was driven by the onslaught of Medicare and insurance regulations, which had documentation and coding requirements that soon complicated the physician–patient interaction and placed the government and insurers between the physician and the patient. My father considered this an unacceptable intrusion into his medical practice and chose to retire early rather than continue to meet the new demands on health care providers.

My own experience with medical records picked up where his left off. We used tape recorders and transcription services to create accurate, legible, and detailed records of the physician–patient encounter. These records were stored in charts identified by patient medical record number. The charts were shipped from location to location as patients were seen in different offices. The same was true of radiographs, which were kept in a similar manner. Although by today’s standards this would be considered a suboptimal way of handling patient data, it was, for the most part, an effective way of keeping the information. The logistics, storage costs, and employee use for chart deployment were the biggest downfalls of this system.

Computers changed all of this, allowing massive amounts of data to be obtained, stored, and recalled with just a few clicks of a mouse. The Health Insurance Portability and Accountability Act of 1996 set new rules for the use of health care information and specifically for the electronic transmission and storage of it. These new rules resulted in an explosion of EMR development in the private sector. Promised benefits included (1) quicker charting and therefore more patients to be seen, (2) immediate charting and thus better record keeping, and (3) reduced costs through decreased staffing and storage.

Although the EMR was promoted as a tool that would reduce workflow, costs, and personnel, in my institution’s experience, it has not lived up to the expectations. A large Midwestern private musculoskeletal group with more than 70 physicians, OrthoIndy, became an early adopter of the EMR. After careful evaluation and consultation with the experts at the time, we made our first EMR purchase in 2001. Implementation of the Penchart EMR (Amicore, Inc, Andover, Massachusetts) was planned in detail and to be executed within 6 months. This instead turned into a 3-year marathon to get rid of the paper and make the physicians competent in software use. There were several pathways our physicians could follow to enter the specifics of the medical encounter. Menu-driven history and physical examination op-
tions could be selected to create a medical note. Unfortunately, this required a great deal of time and patience for the physician to slowly create the medical encounter document. Physicians could either spend patient time entering information into the EMR or complete the documentation after the visit, usually at the end of the day. This was an unacceptable way to maintain a busy orthopedic practice and was wholeheartedly rejected by the physicians. Voice recognition software was introduced as a secondary means to dictate information into the EMR and create acceptable notes for billing and collection purposes. However, the voice recognition software needed to be closely monitored to ensure the accuracy of the notes. Transcriptionists were re-employed by many to create documents that could be scanned into the EMR and used as office visit notes. Physician time was then spent signing off on the notes in the EMR, adjudicating the codes that were then entered, and submitting the appropriate billing level for the previous visit. Although it was an acceptable way to attest to computerization of our EMR system, it was not nearly as efficient as promised. Unfortunately, our $1.5 million investment was not saving us anything. Overhead costs rose with the addition of an information technology department to maintain the software and hardware we had to purchase. The cost of medical record entry increased, and physician satisfaction with the new technology decreased considerably.

Unfortunately, software upgrades did not improve matters, and our initial EMR company was acquired by another that informed us it would no longer service the product we purchased. So 6 years into our experience with the EMR, we had to find another system to replace our initial EMR program. The good news was that the infrastructure for computerization had been installed. Our EMR committee was re-established, and we searched the country for the best system to meet our needs. The Allscripts EMR and Practice Management Program (Allscripts, Chicago, Illinois) was selected, and a plan to merge and replace our Penchart system was implemented. This was another painstaking transition, with consultants and engineers executing the transactions and trainers trying to educate the physicians on how to use the software. As our practice administrator said, “This was like trying to change the tires of an 18-wheel truck going 60 miles per hour.” The software cost $2 million, and implementation cost an additional $1 million. We slowed our practice down for a short time while physicians learned the new software, but the medical visit recording options were no better. We could use menu-driven pick and click options, voice recognition software flows interfere with clinicians’ diagnostic and therapeutic critical thinking tasks. Physicians are distracted from their role, having to be administrative agents and computer software experts to navigate the EMR and enter information.

In essence, physicians have had to pay financially and emotionally to implement technology mandated by the government with little incentive to provide a user-friendly interface. The financial incentives for physician adoption of EMR systems have been modest at best. In fact, we have received about $900,000 in government funds through meaningful use payments. However, this pales in comparison to the $8.5 million spent on software, hardware, upgrades, and maintenance. At the end of 2014, 59% of providers were using an EMR, including 83% of office-based physicians. However, only 34.8% of those physicians used fully functioning EMRs. In 2015, an estimated $37 billion was spent in the United States on electronic health systems, with a total of 86.9% of office-based physicians using EMRs. New regulations for meaningful use will soon take effect, forcing additional spending on upgrades and maintenance. Physicians who were
not compliant with the meaningful use reporting criteria received a 1% reduction in total Medicare reimbursements in 2015. That reduction rose to 2% in 2016 and will increase annually for those unwilling to adopt the electronic standards. Our current EMR is becoming obsolete and will not be compliant with new regulations without significant upgrades. Our options are to continue pouring money into a badly designed system or to switch to yet another EMR solution. Unfortunately, we have not found a suitable alternative. As of the writing of this editorial, there were approximately 1100 companies providing EMR options.

We have recently tried another solution, which involves employing scribes (ScribeAmerica, Fort Lauderdale, Florida) to be present in the examination room and enter a real-time note of the history, examination, and radiographic findings related to a visit. Although this represents somewhat of a return to the days of transcription, it has saved physicians 60 to 90 minutes of computer documenting activities per day. The notes continue to require review and attestation and, in my hands, 15 mouse clicks to finalize them. Although helpful and a nice short-term strategy, it has not resolved the underlying issue involving physician documentation of office visits or helped to lower the costs of documentation. Until a change in regulatory requirements or technology occurs, EMR implementation will remain a high cost for physician practices and a leading cause of physician dissatisfaction with medical practice.

The bright side of digital medicine has included the archiving of information—stored patient data, radiology images, and other significant health care information—for immediate retrieval. This has clearly enhanced our ability to keep track of and better serve our patients. However, the huge volume of information collected and saved in physician or hospital medical records makes its review for medicolegal purposes incredibly complicated, time consuming, and nearly impossible.

One area of interest to me has been the use of Internet-based patient education and ongoing interaction. We have employed a program (Wellbe Integrated Care Delivery; Wellbe, Inc, Madison, Wisconsin) to better educate our patients both preoperatively and postoperatively. This has improved the patient education and consent process. By engaging them before and after surgery through a patient portal, we can reduce patients’ anxiety about the procedure and recovery. Furthermore, we can communicate with patients regarding their concerns and collect patient-reported outcomes at preselected times in an ongoing manner. This has dramatically changed how we collect our research information and reduced the costs of maintaining a research database.

Overall, I am optimistic about the future of digital medicine. There will be tremendous advances in health care in the future because of the changes we have endured during the past 20 years. Innovation with regulatory reform should improve the physician–patient experience and lead to higher levels of physician and patient satisfaction. Otherwise, like my father before me, I may succumb to an early retirement free from the hassles of overregulated health care and disjointed EMR systems.

REFERENCES