



available because of the level of explanation required and physicians' concerns about sharing their personal thoughts, although the patient has the right to examine the entire chart.<sup>4</sup> Examples of portals are PatientSite, developed

at Beth Israel Deaconess Medical Center in Boston, which has about 37,000 active users, and MyChart, outpatient medical records developed by Epic Systems. Versions of MyChart are used by an estimated

2.4 million patients,<sup>4</sup> including about 120,000 at the Cleveland Clinic and 103,000 at the Palo Alto Medical Foundation, nearly half of all adult primary care patients. Portals can allow for secure messaging, including prescription, referral, and appointment requests, but they

typically do not support data input from the patient or outside pharmacies, laboratories, physicians, or hospitals, nor do they communicate with portals at other institutions or work at all sites of care.<sup>4</sup>



Other personal health records, including some being established by Aetna and Well-Point, are based on insurance claims. After portability standards are implemented, patients who change coverage should be able to transfer their data between companies. Although insurers can provide data from administrative claims and can sometimes supplement them from other sources, such records lack detailed clinical information.

Dossia was announced in December 2006, Microsoft HealthVault in October 2007, and Google Health in February 2008, so their collective impact is not yet measurable. Although some physicians and patients will embrace increased use of the Internet for

health care, others may prefer to watch from the sidelines as the bugs are worked out. Moreover, because legal protections have not kept pace with technological advances, Congress may wish to amend HIPAA or enact new legislation<sup>5</sup> to safeguard personally controlled electronic health data. If concerns about privacy, security, and commercial exploitation can be allayed, this nascent enterprise should have a smoother birth.

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## Off the Record — Avoiding the Pitfalls of Going Electronic

Pamela Hartzband, M.D., and Jerome Groopman, M.D.

Many of us remember searching frantically for a lost chart or misfiled laboratory result in the wee hours of the morning as we cared for a sick patient in the emergency ward, or requesting in vain the most recent note from a specialist about a patient who returned to our office after a consultation. The ultimate goal of the electronic medical record — a technological solution being championed by the Bush admin-

istration, the presidential candidates, and New York Mayor Michael Bloomberg, as well as Google, Microsoft, and many insurance companies — is to make all patient information immediately accessible and easily transferable and to allow its essential elements to be held by both physician and patient. The history, physical exam findings, medications, laboratory results, and all physicians' opinions will be col-

lected in one place and available at a single keystroke. And there is no doubt that these records offer many benefits. We worry, however, that they are being touted as a panacea for nearly all the ills of modern medicine. Before blindly embracing electronic records, we should consider their current limitations and potential downsides.

As we have increasingly used electronic medical records in our hospital and received them from

other institutions, we've noticed several serious problems with the way in which notes and letters are crafted. Many times, physicians have clearly cut and pasted large blocks of text, or even complete notes, from other physicians; we have seen portions of our own notes inserted verbatim into another doctor's note. This is, in essence, a form of clinical plagiarism with potentially deleterious consequences for the patient. Residents, rushing to complete numerous tasks for large numbers of patients, have sometimes pasted in the medical history and the history of the present illness from someone else's note even before the patient arrives at the clinic. Efficient? Yes. Useful? No. This capacity to manipulate the electronic record makes it far too easy for trainees to avoid taking their own histories and coming to their own conclusions about what might be wrong. Senior physicians also cut and paste from their own notes, filling each note with the identical medical history, family history, social history, and review of systems. Though it may be appropriate to repeat certain information, often the primary motivation for such blanket copying is to pass scrutiny for billing. Unfortunately, these kinds of repetitive notes dull the reader, hiding the important new data.

Writing in a personal and independent way forces us to think and formulate our ideas. Notes that are meant to be focused and selective have become voluminous and templated, distracting from the key cognitive work of providing care. Such charts may satisfy the demands of third-party payers, but they are the product of a word processor, not of physicians' thoughtful review and analysis. They may be "efficient" for the

purpose of documentation but not for creative clinical thinking.

Similarly, electronic medical records can reproduce all of a patient's laboratory results, often dropping them in automatically. There is no selectivity, because it takes human effort to wade through all the data and isolate the information that is pertinent to the patient's current problems. Although the intent may be to ensure thoroughness, in the new electronic sea of results, it becomes difficult to find those that are truly relevant.

A colleague at a major cancer center that recently switched to electronic medical records said that chart review during rounds has become nearly worthless. He bemoaned the vain search through meaningless repetition in multiple notes for the single line that represented a new development. "It's like 'Where's Waldo?'" he said bitterly. Ironically, he has started to handwrite a list of new developments on index cards so that he can refer to them at the bedside.

True, handwriting in charts is sometimes illegible and can lead to miscommunication. It might seem that the printed (or at least typed) word, which we are all conditioned to respect, would always be more definitive and have more impact than text written by hand. But we have observed the electronic medical record become a powerful vehicle for perpetuating erroneous information, leading to diagnostic errors that gain momentum when passed on electronically.

An advertisement from a health care network touts the electronic medical record as the avatar of "High Performance Medicine." The ad, whose headline reads "Medicine That Doesn't Forget," shows

a country doctor carrying a black bag. "Remember when physicians knew everything about their patients and carried all that they needed in a little black bag?" the ad asks. The electronic medical record, it asserts, "is the modern physician's equivalent of that little black bag. Only better." But the attempt to link this form of technology with nostalgia for the family doctor who spent time in extended conversation and care seems rather incongruous. Indeed, this humanistic depiction of the electronic medical record contrasts sharply with the experience of many patients who, during their 15-minute clinic visit, watch their doctor stare at a computer screen, filling in a template. This is perhaps the most disturbing effect of the technology, to divert attention from the patient. One of our patients has taken to calling another of her physicians "Dr. Computer" because, she said, "He never looks at me at all — only at the screen." Much key clinical information is lost when physicians fail to observe the patient in front of them.

The worst kind of electronic medical record requires filling in boxes with little room for free text. Although completing such templates may help physicians survive a report-card review, it directs them to ask restrictive questions rather than engaging in a narrative-based, open-ended dialogue. Such dialogue can be key to making the correct diagnosis and to understanding which treatment best fits a patient's beliefs and needs. One pediatrician told us that after electronically verifying use of seat belts, bicycle helmets, and other preventive measures, she has scant time to explore clinical issues. Electronic medical records may help to track outcomes and

adherence to guidelines, but they may also force doctors to give “standard” rather than “customized” care.

These problems, we believe, will only worsen, for even as we are pressed to see more patients per hour and to work with greater “efficiency,” we must respond to demands for detailed documentation to justify our billing and protect ourselves from lawsuits. Though the electronic medical record serves these exigencies, it simultaneously risks compromising care by fostering a generic approach to diagnosis and treatment.

We are not Luddites, opposed to all technological interventions; we can see that electronic medical records have many benefits. Mountains of paper are replaced by the computer screen, with rapid access to complete and organized information, with risks such as dangerous drug interactions au-

tomatically flagged. But we need to learn how to use this powerful tool in the way that is best for patient care, regardless of whether it’s the most “efficient” way.

We should instruct house staff that they must create independent, personal notes by talking to the patient and verifying the medical history themselves. We should discuss with payers what constitutes real documentation of time and effort rather than sleight of hand. We should use electronic formats that require us to select and insert specific, relevant laboratory results.

Perhaps most important, we should be cautious in using templates that constrain creative clinical thinking and promote automaticity. We must be attentive to the shift in focus demanded by electronic medical records, which can lead clinicians to suspend thinking, blindly accept diagno-

ses, and fail to talk to patients in a way that allows deep, independent probing. The computer should not become a barrier between physician and patient; as medicine incorporates new technology, its focus should remain on interaction between the sick and the healer. Practicing “thinking” medicine takes time, and electronic records will not change that. We need to make this technology work for us, rather than allowing ourselves to work for it.

Drs. Hartzband and Groopman report holding stock in Microsoft and Google.

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## Physician Workforce Crisis? Wrong Diagnosis, Wrong Prescription

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Despite the fact that there are now more physicians per capita in the United States than there have been for at least 50 years, the Council on Graduate Medical Education (COGME) recently predicted a 10% shortfall of physicians by 2020. Public concern about access to care, reports of difficulties in recruiting physicians in many specialties, and discussion of the looming collapse of primary care all contribute to the sense of crisis. The Association of American Medical Colleges has responded with calls for a 30%

expansion of U.S. medical schools and a lifting of the current cap on Medicare funding for graduate medical education so that federal dollars can support the expansion of the workforce.

Before acting on these recommendations, we should carefully consider the accuracy of the diagnosis and the likely consequences of the prescription. Three observations should give policymakers pause (see Table 1).

Physician supply varies dramatically by region of the country. COGME is concerned about a 10%

shortfall at a time when the regional supply of physicians varies by more than 50% (see Table 1). An analysis of the country’s hospital-referral regions (regional markets for tertiary care) in which regions are categorized into quintiles on the basis of their per-capita supply of physicians reveals that the ratio of the supply in the highest-quintile regions to that in the lowest-quintile regions is 1.56 for primary care, 1.89 for medical specialists, and 1.43 for surgical specialists.

But the presence of more phy-