Electronic Health Records: Who Pays?

TO THE EDITOR: I read with great interest the article by Chaudhry and colleagues (1) and the accompanying editorial by Halamka (2) on the value of the electronic health record (EHR) in improving process and outcome in health care. As a medical oncologist who has seen his practice crippled economically by changes in Medicare reimbursement, and as someone conversant with the problems of internists in keeping their practices economically viable, I wonder what to perform all of this. Some hospital chains are offering to their staff the cost-saving opportunity to piggyback onto their newly established EHRs. However, software licenses for freestanding practices that are not affiliated with hospitals are likely to be very expensive. Taking old paper charts and transforming them into EHRs will be very labor-intensive and expensive. Unless hospitals develop interfaces with freestanding office practices, the need to manually enter laboratory data and radiograph reports into an EHR will be extraordinarily labor-intensive and expensive. Unless a national EHR is established with links to hospital information and insurance claims systems, many small practices will find that adapting to this new world is difficult to impossible.

The specter of the government tying the level of Medicare reimbursement to EHR implementation—arguably an unfunded mandate—is particularly difficult for small practices. Several well-trained and highly regarded internists in our community have gone to a cash-only, prepaid model (where patients pay a monthly fee and have unlimited access to the physician). A huge unfunded mandate will drive more capable physicians out of the mainstream and into boutique practices. Only the federal government has the resources to underwrite a conversion to a unified national EHR. In the current climate in Washington, I find it difficult to believe that Congress is willing to fund such a venture.

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Potential Financial Conflicts of Interest: None disclosed.

References

Redesigning Training for Internal Medicine

TO THE EDITOR: In the recent American College of Physicians (ACP) position paper (1), Weinberger and colleagues recommended initiatives to redesign resident training, including emphasis on ambulatory care experience. Another important facet in redesigning internal medicine training is to provide training on how to perform the most commonly needed procedures for both inpatient and outpatient care and not training residents to know only what to perform.

Current training seems to prepare residents to treat more complicated medical problems but not simpler ones (2–4). However, in handling these complicated diagnoses, residents sometimes call on subspecialists to do what they already know should be done but do not know how to do it. For example, residents may know that a stress test should be done in the context of managing chest pain or that joint tapping may be necessary for diagnosing an inflamed joint, but they are not very skilled in performing the procedures. On the other hand, residents may not feel comfortable in addressing simple problems, such as headache or vaginitis, and their associated procedures, such as a Papanicolaou (PAP) smear. This results in internists acting as “traffic directors” who are independently incapable of handling minor or major problems, with minimal job satisfaction (5).

To satisfy both patients and physicians, internal medicine needs to be redesigned to adequately train residents beyond the current requirements of a few procedures to include the most commonly performed clinical procedures, such as stress tests, sigmoidoscopy, PAP smears, joint aspiration and injections, and skin lesion removal. Such a change might restore physician job satisfaction and might improve financial compensation that rewards procedural medicine more than a cognitive one.

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Potential Financial Conflicts of Interest: None disclosed.

References

TO THE EDITOR: I am responding to the ACP position paper on redesigning training for internal medicine by Weinberger and colleagues (1). Redesigning the training of internal medicine residents may prepare some for their future positions, but I do not think it will increase the number of general internists.

Having been in private practice on and off for 16 years and with a university-sponsored internal medicine residency program and the U.S. Department of Veterans Affairs on and off for 10 years, I think you have to change the end point—not the training. General internists must be able to work less hard and be compensated more for what they do.

In a small-town setting, general internists will have to provide both inpatient and outpatient services. In a larger city, a general internist is often a traffic director, merely sending patients to various subspecialists.

A postoperative cardiac patient often develops dyspepsia, an...
acute gout attack, and stress elevation of glucose levels. Instead of having a general internist handle all 3 entities, 3 consultations are effected, which are reimbursed much more than if the general internist cared for the patient.

The general internist has to be very adept at running patients through, coping with the coding maze, and handling the insurance company and Medicare harassment. Our residents are poorly trained for these nonmedical duties.

Residents are not stupid. They see the general internist’s job dissatisfaction, and they seek out fellowships—any fellowship to avoid doing general internal medicine.

The powers that be have been very ineffective in obtaining reasonable remuneration for generalists, whereas the subspecialists have been much more effective in this area.

The ACP, Accreditation Council for Graduate Medical Education, American Board of Internal Medicine (ABIM), Residency Review Committee, American Medical Association, and others will have to work through Congress to improve the general internist’s situation (insurance companies usually follow) before any major change in the declining numbers of general internists will occur. This goal is faced by the fact that the National Institutes of Health budget has been cut for the first time in 36 years. With the cost of the war and the current climate, now is not a good time to expect any success.

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Disclaimer: The views expressed herein are those of the author and do not necessarily reflect those of the U.S. Department of Veterans Affairs.

Potential Financial Conflicts of Interest: None disclosed.

Reference

TO THE EDITOR: The recent paper by Weinberger and colleagues (1) provides a comprehensive approach to factors that support the need for redesigning training in internal medicine. However, we think that some issues could be addressed in a more straightforward manner to strengthen the urgent need for revisiting internal medicine training (2).

First, what are the problems for internal medicine? Internal medicine has been asleep for too long. Some of the dynamic and technology-supported subspecialties consider that a patient who sees an internist first is simply taking a detour. Internal medicine should be able to show its competencies convincingly to the public or to the decisionmakers in health care.

Second, do health care systems need internal medicine? Older patients and patients with polymorbid conditions who have complex and chronic diseases are steadily increasing in number. Their management is a core competency of internal medicine because it is patient-centered and is committed to ethical, scientific, and holistic principles of patient care. In addition, a well-trained internist is competent in using appropriate diagnostic-therapeutic procedures and is careful to avoid costly over-diagnostics and double diagnostic schedules.

Third, do patients need internal medicine? A patient with acute renal failure may go directly to the nephrologist, but if the patient is sick due to an undetermined disease or several diagnostic or therapeutic options are available (such as multiple myeloma or leptospirosis leading to acute renal failure), the best physician for the patient is the internist and the best place to go is the department of internal medicine. Thus, for all cases that involve several specialties, internal medicine is the discipline that oversees, links, and coordinates them—not by being better or by acting as the “mother” but simply by providing an integrating service that is so urgently needed in today’s practice.

Finally, what should be done? In our opinion, the most important issues that should be considered in internal medicine training programs are teaching pathophysiology and disease mechanisms during the undergraduate education and addressing the conflict between service and education during the graduate education. Decisionmakers in politics and institutions, insurers, journalists, and the general public need a better understanding of what internal medicine can offer to the health care system and to the individual patient. An established, permanent contact with politicians and other health care decisionmakers could be helpful in an attempt to achieve the best combination of responsible patient care, quality of training, and the satisfaction of the trainee.

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References

TO THE EDITOR: The internal medicine community is beginning to reach consensus on how to strengthen graduate medical education. In the ACP position paper by Weinberger and colleagues (1) and the Association of Program Directors in Internal Medicine (APDIM) position paper by Fitzgibbons and colleagues (2), the discussions continue.

For 2 years, the Alliance for Academic Internal Medicine (AAIM) Education Redesign Task Force, which includes representatives from the 5 associations in the AAIM, as well as the ACP and the American Board of Internal Medicine (ABIM), has been working 1) to define a core competency in internal medicine and 2) to explain how all internal medicine residents can pursue “individualized career pathways” in internal medicine.

The core competency is common to all of internal medicine, which means that internists should maintain these competencies regardless of their careers as generalists or hospitalists, cognitive or procedural specialists, physician-scientists or clinician-educators, or clinicians in rural or urban communities.

Unfortunately, some observers have misunderstood individual-
ized career pathways (3, 4). During a 3-year internal medicine residency, residents would demonstrate competence in the core and have opportunities to pursue training that relates to their ultimate career goals, such as ambulatory care, hospital medicine, research, or specialty emphasis or a traditional pathway that is similar to the current mix of experience in ambulatory and hospital settings.

In addition to defining the core and encouraging individualized career pathways, the AAIM Education Redesign Task Force will develop recommendations on many important topics, including the timing of career selection, the need for fully embracing competency-based education and evaluation, ambulatory training, and faculty development.

The AAIM consists of the Association of Professors of Medicine, APDIM, the Association of Specialty Professors, the Clerkship Directors in Internal Medicine, and the Administrators of Internal Medicine. The 5 associations in AAIM represent faculty and staff in departments of internal medicine at medical schools and teaching hospitals in the United States and Canada, including department chairs, division chiefs, fellowship program directors, residency program directors, clerkship directors, and other departmental faculty and executive and administrative staff. As a result, the AAIM is well-positioned to turn the recommendations of the AAIM Education Redesign Task Force into lasting change.

Currently, the AAIM Education Redesign Task Force is distributing a set of preliminary recommendations throughout the internal medicine community and looks forward to working with the rest of the community—particularly ACP, ABIM, the Residency Review Committee, and the specialty societies—to implement the changes that are necessary for strengthening internal medicine training.

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References

IN RESPONSE: We agree with Dr. Mansi that the model of internists serving as “traffic directors” not only is unattractive to physicians but also delivers suboptimal care to patients. Appropriate procedural training is an important component of residency. Difficulty in assuring that each resident receives sufficient experience to achieve competence and the widely differing needs of residents have contributed to a lack of agreement about what procedures should be required (1, 2). We favor a model in which procedures fall into 3 categories: 1) those that are required of all residents, 2) those that should be available and are encouraged but are not required during training, and 3) specialized procedures that require additional training and experience that can be obtained during the customized component of residency training by residents who wish to gain competence in performing these procedures. Such a model for procedural training is currently being developed by the AAIM Education Redesign Task Force.

Dr. Horning and Dr. Dalekos and colleagues correctly point out that redesigning training is only one component of the changes that must be made in the best interests of internists and their patients. Additional objectives, such as redesigning the dysfunctional payment system and improving physician satisfaction (through decreasing physician hassles and implementing better practice models), are high priorities of the ACP, which is working actively to address these issues. Society must recognize that broadly trained specialists in internal medicine represent the cornerstone of the U.S. health care system through their application of scientific and pathophysiologic knowledge to diagnosis and treatment and through their longitudinal care of patients with complex and chronic illness.

Drs. Fitzgibbons and Meyers have outlined the activities of the AAIM Education Redesign Task Force in contributing to the redesign of residency training. The Task Force has been extremely valuable in convening a variety of stakeholders in internal medicine training to implement many changes proposed in our paper, as well as in the APDIM position paper by Fitzgibbons and colleagues (3). In response to the challenge posed by Drs. Schroeder and Sox (4) to “putt or get off the green,” the Task Force will be an important vehicle for effecting changes in training. The ACP is pleased to be participating in the Task Force, and we look forward to substantial progress in achieving the goals of redesigning residency training.

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References

CLINICAL OBSERVATIONS

Deficient Medical Care for Adults with the Turner Syndrome

Background: The Turner syndrome is due to complete or partial absence of 1 sex chromosome in a phenotypic female, occurring in approximately 1 in 2500 live female births (1). Individuals with the Turner syndrome show a wide range of phenotypic variation, and those with the classic syndrome have short stature, webbed neck, low hairline, and congenital heart defects. The majority of Turner syndrome patients have normal karyotypes and are phenotypically female. The Turner syndrome is due to complete or partial absence of 1 sex chromosome in a phenotypic female, occurring in approximately 1 in 2500 live female births (1). Individuals with the Turner syndrome show a wide range of phenotypic variation, and those with the classic syndrome have short stature, webbed neck, low hairline, and congenital heart defects. The majority of Turner syndrome patients have normal karyotypes and are phenotypically female.
disorder are at increased risk for congenital heart defects, including bicuspid aortic valve, aortic coarctation, and dilation of the aorta (2, 3). These cardiovascular defects require timely diagnosis, monitoring or treatment to prevent aortic valve deterioration, endocarditis, and aortic dissection (2). Many patients have renal defects and progressive hearing loss. Good clinical practice recommends screening for these problems with echocardiography, renal ultrasonography, and audiology at the time of diagnosis (4). The risk for deterioration of the aorta in the Turner syndrome mandates regular echocardiographic monitoring over time (4). There is little information on the extent to which these practice guidelines are implemented.

**Objective:** To investigate the state of medical care received by girls and women with the Turner syndrome who were participating in a National Institutes of Health (NIH) protocol.

**Methods and Findings:** In this retrospective, cross-sectional study, we surveyed 126 adults (mean age, 36 years [SD, 11]; range, 18 to 62 years) and 52 girls (mean age, 12 years [SD, 3]; range, 7 to 17 years) with the Turner syndrome and their parents regarding 3 screening tests: echocardiography, renal ultrasonography, and audiology (4). Participants were recruited through NIH Web site notices for an institutional review board–approved study on the Turner syndrome, conducted at an NIH Clinical Research Center between 2001 and 2005. All participants or parents of minors signed informed consent forms. Ninety percent of participants were white; the remainder were Asian, African-American, and Hispanic. Inclusion criteria and study design have been described elsewhere (5). Participants answered specific questions regarding echocardiography, renal ultrasonography, and audiology on a written survey, with verification by personal interviews. Of girls with the Turner syndrome, 41 of 52 (79% [95% CI, 68% to 90%]) had all recommended tests (echocardiography, 90%; renal scan, 87%; audiology, 85%) while only 46 of 126 adults (36.5% [CI, 28% to 45%]) had all 3 tests (echocardiography, 69%; renal ultrasonography, 47%; audiology, 88%). More important, 39 of the adults (31% [CI, 24% to 40%]) had never had echocardiography even though, on average, at least 20 years had elapsed since the Turner syndrome was diagnosed. In contrast, only 5 of the girls (10% [CI, 8% to 18%]) had not had echocardiography, and all 5 had received diagnoses very recently. The mean age at diagnosis for adults was 12.3 years (SD, 8.7). The adults were relatively well-educated (mean years of formal education, 15.4 [SD, 2.3]), and 81% had medical insurance. Comparison of demographic characteristics for those who had had all 3 tests as recommended \(^{(n = 46)}\) and those who had had none or at most 1 of the recommended tests \(^{(n = 34)}\) showed no differences in age at diagnosis, time since diagnosis, years of education, or medical care coverage.

**Conclusion:** Most girls with the Turner syndrome are receiving recommended care, including cardiac, renal, and hearing evaluation. In contrast, many adult women with this disorder are not receiving adequate care. It is especially concerning that almost one third of adults with the Turner syndrome had never had cardiac imaging, despite the fact that these women are at high risk for life-threatening complications of aortic dissection and endocarditis. Fewer than half had received screening for renal abnormalities. The relatively high rate of audiology screening seems to be due to patient-driven concern about hearing loss. The demographic characteristics of our adult study sample do not offer any obvious explanation for this deficiency in medical care. The women were generally well-educated and were health-conscious; most had health insurance and were receiving regular medical care. We conclude that there is a need for increased awareness among health care providers for the specific risks and health needs of adult women with the Turner syndrome.

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**References**

**Hyperlactatemia due to Nevirapine**

**Background:** Hyperlactatemia is a well-known adverse reaction in HIV-infected patients who are treated with nucleoside analogue reverse transcriptase inhibitors (NRTIs) (1). However, data on its association with the other 2 widely used classes of antiretroviral agents, nonnucleoside reverse transcriptase inhibitors (NNRTIs) and protease inhibitors, are inconclusive. To our knowledge, no cases of hyperlactatemia secondary to nevirapine use have been reported to date.

**Objective:** To describe a patient with nevirapine-induced hyperlactatemia who gradually recovered after cessation of treatment.

**Methods and Findings:** A 36-year-old man received a diagnosis of HIV infection in November 2000 and began receiving azidothymidine–lamivudine–nevirapine in January 2001. He tolerated the treatment well for 20 months, achieving suppression of the viral load to undetectable levels and an increase in CD4 \(^+\) cell count to 1.506 \(\times\) 10\(^9\) cells/L. He then began to report nausea, fatigue, dyspnea, and pain in the epigastrium. He did not take any other prescription or over-the-counter medication.

On admission, he was slightly tachypneic (20 breaths/min), and physical examination was notable only for mild epigastric tenderness. Laboratory work-up showed mildly elevated aminotransferase levels (aspartate aminotransferase level, 44 U/L [normal range, 7 to 40

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Volume 145 • Number 11
Letters

Figure. Lactate level progression over time.

![Lactate level progression over time](image)

**AZT–3TC–NVP withdrawn and vitamins started**
**NVP and vitamins withdrawn while SQV–LPV–RTV continued**

Lactate level, mmol/L

Time, d

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

0 2 4 6 8 10 12 14

3TC = lamivudine; AZT = azidothymidine; LPV = lopinavir; NVP = nevirapine; RTV = ritonavir; SQV = saquinavir.

U/L); alanine aminotransferase level, 64 U/L [normal range, 7 to 40 U/L]; elevated triglyceride level (3.03 mmol/L [268 mg/dL] [normal range, 0.57 to 1.69 mmol/L [50 to 150 mg/dL]]), elevated cholesterol level (8.21 mmol/L [317 mg/dL] [normal range, <4.92 mmol/L [<190 mg/dL]], and a lactate level of 13.1 mmol/L (normal range, 0.6 to 2.4 mmol/L) with mild metabolic acidosis (pH level, 7.34; HCO3 level, 18.3 mmol/L). Results of serologic tests for hepatitis B and C viruses were negative. An extensive investigation ruled out other pathologic conditions that could lead to hyperlactatemia. Empirical therapy consisted of withdrawal of the antiretrovirals and administration of l-carnitine and a multivitamin tablet containing thiamine and vitamin B6 (2, 3). Three weeks later, the patient had marked clinical improvement and a gradual decrease in lactate level to 5 mmol/L. At this time, and because of an increase in viral load, nevirapine–saquinavir–ritonavir treatment was administered (eliminating the NRTIs azidothymidine and lamivudine) and the cofactors supplementation was continued. Six weeks later, symptoms recurred and were accompanied by an increase in lactate level to 12.1 mmol/L. Finally, the antiretroviral regimen was changed to saquinavir–ritonavir–nelfinavir. The lactate level normalized (despite withdrawal of the vitamins), which persisted up to the last follow-up visit in December 2005. The Figure shows the progression of the lactate level over time and its association with the therapeutic interventions.

Conclusions: We present what we believe is the first well-documented case of hyperlactatemia associated with the use of the NNRTI nevirapine. In fact, determination of Naranjo and colleagues’ probability scale (4) reveals a score of 9, indicating a “highly probable” adverse event.

Of note, a recently published cohort study (5) revealed an association between the NNRTI efavirenz, but not nevirapine, and hyperlactatemia, while a similar association was also previously shown with the protease inhibitor ritonavir. Although we did not perform sophisticated biochemical analysis (for example, determination of the enzymatic activity of the respiratory chain and documentation of mitochondrial DNA depletion), and we cannot exclude the possibility that the first episode of hyperlactatemia was related to the combination of NRTIs and that the second episode was related to the combination of protease inhibitors, we think that pinpointing nevirapine as the culprit medication is more logical. We suggest that clinicians caring for HIV-infected patients be vigilant for the development of hyperlactatemia, even in non–NRTI-including regimens.

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References

Correction

Correction: Preclinical Carotid Atherosclerosis in Patients with Rheumatoid Arthritis

In an article on preclinical carotid atherosclerosis in patients with rheumatoid arthritis (1), serum homocysteine values in Table 3 were incorrectly reported due to a conversion error. The correct values should be 5.98 (SD, 1.67) μmol/L in patients with no plaque and 6.84 (SD, 2.27) μmol/L in those with plaque. The P value remains identical (P = 0.035) because the conversion error was applied systematically. The paper and its conclusions are unaffected by this error.

Reference