Health Information Technology: Help or Hindrance?

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The practice of medicine in general and nephrology in particular grows increasingly complex with each passing year. In parallel with this trend, the purchasers of health care are slowly shifting the reimbursement paradigm from one based on rewarding transactions, or work performed, to one that rewards value delivered. Within this context, the health-care value equation is broadly defined as quality divided by costs. Health information technology has been widely recognized as 1 of the foundations for delivering better care at lower costs. As the largest purchaser of health care in the world, the Centers for Medicare and Medicaid Services has deployed a series of interrelated programs designed to spur the adoption and utilization of health information technology. This review examines our known collective experience in the practice of nephrology to date with several of these programs and attempts to answer the following question: Is health information technology helping or hindering the delivery of value to the nation's health-care system? Through this review, it was concluded overall that the effect of health information technology appears positive; however, it cannot be objectively determined because of the infancy of its utilization in the practice of medicine.

Key Words: Health information technology, Meaningful use, Physician Quality Reporting System, Electronic prescribing

Nephrology practices, along with a wide variety of health-care providers, are in the midst of a significant technology transformation. Although our colleagues in business sectors as diverse as financial services and the airlines industry have productively leveraged information technology for years, the health-care industry in the United States is a newcomer to this table. With its 2001 publication *Crossing the Quality Chasm: A New Health System for the 21st Century*, the Institute of Medicine identified the effective use of information technology as 1 of several recommendations to improve the U.S. health-care delivery system.[1] A few years later, the U.S. Congress began laying the foundation for the current transformation by passing the Tax Relief and Health Care Act of 2006. Among other things, the Tax Relief and Health Care Act of 2006 compelled the Centers for Medicare and Medicaid Services (CMS) to create the Physician Quality Reporting Initiative. Now in its 8th year and since renamed the Physician Quality Reporting System (PQRS), this program laid the groundwork for reporting quality metrics to CMS. In a similar fashion, CMS began incentivizing the utilization of electronic prescribing in 2008 after the U.S. Congress passed the Medicare Improvements for Patients and Providers Act. More recently, the American Recovery and Reinvestment Act of 2009 (ARRA) birthed the CMS Electronic Health Record (EHR) Incentive Program, frequently referred to as "Meaningful Use." Again using a series of financial carrots and sticks, CMS has driven the acquisition and adoption of EHRs by physicians and hospitals alike. In May 2013, Kathleen Sebelius, the Secretary of Health and Human Services, announced that more than 50% of all doctors and 80% of all hospitals have received payments for adopting or meaningfully using a certified EHR.[2]

In the midst of this technology transformation, there is growing criticism regarding the path we are on. Last fall, 4 ranking members of the U.S. Congress sent Ms. Sebelius a letter urging her to raise the bar for Meaningful Use and to push harder on interoperability.[3] The lay press has joined the fray with articles suggesting that EHRs are contributing to higher costs by facilitating "upcoding."[4] Finally, in late July of this year, the American Medical Association (AMA) provided testimony to the Health Information Technology Policy Committee's Workgroups on Certification, Adoption, and Implementation.[5] To paraphrase, that testimony effectively stated that the Office of the National Coordinator for Health Information Technology (ONC) had widely missed the mark with Meaningful Use, and the AMA recommended a substantial overhaul of the program. Against this background, one might ask the following question: Is the technology serving us, or are we serving the technology? Let us try to answer that question by examining each program in greater detail.

PQRS

The PQRS program is part of the CMS value-based purchasing initiative. Using an incentive structure consisting of financial carrots and sticks, the PQRS represents a classic pay-for-reporting program. The incentives represent a percentage of the providers Medicare Part B Allowable. The program is designed to compel Medicare providers to submit quality data to CMS using 1 of several available methods. In the program's early years, successful reporting was rewarded with an incentive payment. As the program has matured, the financial structure of the incentive is changing from a reward for successful reporting to a penalty for those who do not report. To date, the program's success has not been overwhelming.

As depicted in Figure 1, approximately 1/3 of nephrologists participated in the program during 2011, a figure consistent with the broader provider population.[6] Participation rates from 2012 are not available, but the trend is

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Financial Disclosure: The author declares that there are no relevant financial interests.

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1548-5595/$36.00

http://dx.doi.org/10.1053/j.ackd.2014.02.014

not favorable. Providers who do not participate in 2013 will face a 1.5% reduction in their 2015 Medicare Physician Fee Schedule. Perhaps the looming penalty will stimulate broader participation.

As previously mentioned, this is a pay-for-reporting program. More specifically, a provider's success is only dependent on successfully submitting data to CMS. Of interest, performance scores are calculated for each measure, but the same incentive is paid to providers at both ends of the performance spectrum. In other words, if only 5% of my eligible patient population receives a seasonal influenza vaccine, but 95% of my partners patients are vaccinated, we both receive the same financial incentive. This difference between pay for reporting and pay for performance is perhaps highlighted in Figure 2, which examines performance rates among providers who reported the same measures in each of the 3 years 2009 to 2011.[6] Measures 121, 122, 123, and 135 are the 4 CKD-related individual PQRS measures. The providers reporting those measures in each of the 3 years under study are almost certainly nephrologists. The numbers are admittedly very small (from a minimum of 55 for measure 135 rising to a maximum of 646 providers for measure 122), but one does not see a substantial improvement in performance for these measures over time. Would this trend be different if this were a pay-for-performance program?

We may find the answer to this question in a new CMS program. The physician value-based payment modifier program (physician VBP), which is currently in play for practices with 10 or more eligible professionals (EPs), creates a positive or negative financial incentive for practices on the basis of the value the practice delivers to CMS.[7] Value in this program is defined broadly as quality divided by cost, and the quality metric in the physician VBP modifier program is determined by performance scores for specific PQRS measures. Unlike the classic PQRS program, which rewards or penalizes a provider simply based on whether or not they have successfully reported, the physician VBP reward or penalty will be determined in part by quality measure performance scores.

CLINICAL SUMMARY

- CMS incentive programs are facilitating the adoption of health information technology.
- Electronic prescribing is the most successful example to date.
- Usability remains an important barrier to successful EHR adoption.
- The premise that widespread adoption of health information technology will lead to better patient outcomes requires further study.

Electronic Prescribing

From an adoption perspective, the electronic prescribing experience has been substantially more successful than PQRS. In the years before the initiation of the CMS e-prescribing incentive program, less than 10% of office-based providers electronically prescribed. With the program's introduction in 2009, use has dramatically increased (Fig 3).[8]

Nephrologists are well represented in this group. According to Surescripts, 78% of nephrologists sent prescriptions electronically in 2012.[8] As a specialty, nephrology ranked 6th among all provider groups in e-prescribing adoption rates. General internists led the way, with 93% of internists e-prescribing in 2012. Of interest, this steep adoption curve was fueled by an incentive structure almost identical to that described here for PQRS. Again, using a series of financial carrots and sticks defined as a percentage of the providers Medicare Part B Allowable, CMS has been able to stimulate the adoption of electronic prescribing. In a recent review by Joseph and colleagues, the authors estimate that the CMS incentive program was responsible for adding approximately 90,000 providers to the ranks of those electronically prescribing between mid-2008 and the end of 2010.[9] Using information from the Surescripts database, the authors found that the number of new e-prescribers increased from an average of 1436 per month to over 6300 new prescribers per month after the institution of the CMS eRx program.

Of course, adoption is 1 thing, but has electronic prescribing delivered value to the health-care system? The reported benefits of e-prescribing fall into several categories:

1. Handwriting legibility issues are resolved with e-prescribing.
2. Clinical decision support (CDS) in the form of drug-drug and drug-allergy interactions is delivered at the point of prescribing.
3. Formulary restrictions are also delivered at the point of prescription creation.
4. E-prescribing requires the use of a standard vocabulary, which is a fundamental requirement for interoperability.

Creating an electronic prescription is more time-consuming than scratching one out with pen and paper, but few would argue that the legibility issue does not favor e-prescribing. On the other hand, in many cases the existing deployment of CDS has led to "alert fatigue." Roughly speaking, alert fatigue is defined as effectively ignoring the CDS warnings because there are so many of them that the user no longer pays attention to them. This is reminiscent of a digital "Boy Who Cried Wolf" scenario. However, unlike Aesop's fable, in our case the wolf does not consume the flock, but instead we miss an opportunity to avoid a medical error. Formulary warnings can bring value. Receiving a call from the pharmacist a couple of hours after seeing a patient because the statin you prescribed will cost the patient $100 whereas the acceptable alternative is $5 is a waste of several people's time. Presenting formulary restrictions at the point of care also creates savings for the health-care system. Finally, as we approach the holy grail of interoperability, it is very clear that electronically exchanging health information is best served by the capture of discrete data. If the statin in your EHR is attached to what is called an RxNorm code,[10] then every certified EHR will recognize that medication as the one you intended to use.