The Impacts of Electronic Health Record Implementation on the Health Care Workforce

Xiaoming Zeng

Health care organizations at various levels are transitioning into the new electronic era by implementing and adopting electronic health record systems. New job roles will be needed for this transition, and some current job roles will inevitably become obsolete due to the change. In addition to training new personnel to fill these new roles, the focus should also be on equipping the current health care workforce with knowledge and skills in health information technology and health informatics that will support their work and improve quality of care.

The landscape for the practice of health care is changing. One change is the move from a predominantly paper-based practice environment to a predominantly electronic or paper-light environment. Aiming to increase effectiveness and efficiency in health care, various computer and information technologies are being adopted and implemented by and for providers, administrators, and consumers in the health care industry. Electronic health records (EHRs), a key component of these health information technologies, have been implemented in health care organizations at all levels, from academic medical centers to multi-specialty medical groups to solo practices [1, 2].

Several factors have contributed to the adoption of EHRs: the meaningful use incentive program from the federal government [3]; the advancement of computer and information technologies, including both hardware and software; and the shift from a volume-based system to one focused on quality and value of care [4]. In the United States, the adoption rate of basic EHR systems among nonfederal acute care hospitals has increased from 9.4% in 2008 to 75.5% in 2014—an 8-fold increase in 6 years. In North Carolina, almost all major health care systems have implemented new EHR systems in the past 5 years. The basic EHR adoption rate in North Carolina has increased from 11% in 2008 to 78.4% in 2014 [5]. Very soon, most (if not all) of our health care data will exist only in digital formats in some health care organizations.

Any system-wide changes in a vertical industry like health care will shake up the original distribution of the workforce. Some new job roles will emerge, and some existing job roles will disappear. In other sectors, universal access to personal computing devices and e-mail communication caused typists to disappear from typical office settings. Likewise, post offices have adjusted their workforce needs and business hours because fewer people mail letters. Now that it is easier for consumers to order products online, the need has shifted from delivering letters to delivering packages. On the other hand, more information technology professionals are needed to manage e-mail servers and computing devices.

Given the expedited implementation of EHR systems in the United States, what will be some of the changes in the health care workforce? First, what job roles are needed for EHR implementation? Second, what job roles are needed after EHR is implemented and integrated with health care operations? Third, what job roles will become obsolete after EHR systems are adopted?

It is a challenge to define the health information technology (HIT) workforce, as this role is not a specific job category listed in the Bureau of Labor Statistics. An HIT professional could be a computer scientist working on diagnostic assistant software, a health information manager supervising information privacy, or a nurse who serves as a superuser for EHR implementation. Whatever their role, HIT personnel need to have knowledge about health care, or at least the workflow in health care organizations [6]. Professionals working only with information technologies, such as computer networking technicians or database administrators, should not be considered part of the HIT workforce, although they may be employed in a health care setting. Their job market could grow due to EHR implementations, but they have little impact on the interaction between health care and information technology. Thus we will focus our discussion on those new job roles that will impact the interaction between health care and information technology.

New Job Roles for EHR Implementation

An EHR is an enterprise information system. It includes an array of information technologies that will affect data, workflow, and the people in an organization. Professionals

with different roles need to work as a group in order to successfully implement EHR systems. The Office of the National Coordinator for Health Information Technology, during the rollout of HIT training grants in 2009, defined 6 different job roles for EHR implementation [7].

First, practice workflow and information management redesign specialists are workers who assist in reorganizing the work of providers to optimize the features of HIT that are designed to improve health care. Individuals in this role may have backgrounds in health care (eg, as a practice administrator) or in information technology, but they are not licensed clinical professionals.

Second, clinician and practitioner consultants work with health care providers to optimize the implementation of HIT in order for providers to offer better health care while containing costs and maintaining efficiency.

Third, implementation support specialists provide onsite user support for a period of time before and during implementation of HIT systems in clinical and public health settings. These individuals provide support services, above and beyond what is provided by the vendor, to ensure that the technology functions properly and is configured to meet the needs of the redesigned practice flow.

Fourth, implementation managers provide onsite management of mobile adoption support teams for a period of time before and during implementation of HIT systems in clinical and public health settings.

Fifth, technical software support staff provide ongoing support of the technology deployed in clinical and public health settings. In addition to system maintenance, including patching and upgrading software, they also provide one-on-one support and help users with questions or problems in a traditional help desk model.

Finally, trainers use adult learning principles to design and deliver training programs to the employees in clinical and public health settings. The quality of training often determines the acceptance of a new EHR system.

Workers in these job roles must function as a team in order to successfully implement EHRs. A single individual could perform in several of these roles. For example, a consultant could be a trainer during the implementation of an EHR system for a small practice.

New Job Roles After EHR Implementation

New job roles will emerge as EHR systems are implemented in health care organizations. These new job roles will either support the continual integration of EHRs with clinical workflows or will leverage the captured clinical and other data to improve health care outcomes.

Clinical informaticians are professionals who utilize their clinical expertise and knowledge of patient care, operational processes, and information systems to participate in the design, specification, implementation, and evaluation of an EHR system. They act as knowledge resources regarding the EHR system, and they ensure effective problem resolution at initial technical levels. They will lead the transition from current practices to new automated practices while incorporating change management principles. Clinical informaticians should have deep knowledge about workflows and have the creative and critical thinking skills to integrate EHR systems with workflows. The American Board of Medical Specialty has approved clinical informatics as a subspecialty in medicine. The American Nursing Credentialing Center also has a board certification examination on informatics nursing.

Medical scribes, who help clinicians document clinical encounters, have become a growing profession following the implementation of EHR systems [8]. The increased requirement for detailed documentation and the subpar usability of human-computer interfaces in many EHR systems have extended the time that clinicians need to spend collecting and documenting data. Many physicians find they have less time to focus on patients during an already short visit. Medical scribes can assist the provider in different ways: navigating the EHR, responding to various messages as directed by the clinician, locating information for review, and entering information into the EHR as directed by the clinician. It is a cost-effective way to separate clerical duties from clinical work. Physicians often feel more satisfied after employing medical scribes to support their clinical practices because they can focus more on patients. The American College of Medical Scribe Specialists certifies medical scribes.

Health care quality improvement specialists will be able to leverage the data available in the EHR system to deliver quality improvement projects for service and clinical activities. One touted benefit of EHR systems is the potential for positive impacts on patient safety and quality. Indeed, many health care organizations are using the data available in EHR systems for quality improvement. Health care quality improvement specialists must be familiar with the measures associated with different accreditations and generate reports to meet the criteria for reimbursement.

Called the sexiest job in the 21st century [9], health care data scientists are an emerging type of professional who can proficiently acquire and analyze large amounts of data from heterogeneous sources, often in real time. The implementation of EHR systems has accelerated the generation and storage of health care–related data. Other data sources, such as genomics and consumer-generated data, will also drastically increase the volume and complexity of data. Health care data scientists could be data analysts, business analysts, or statisticians. Data scientists need to have proficiencies in both computer programming and statistical analysis. They also need to have excellent communication skills in order to convey findings for decision making. They may work collaboratively with health care providers or with quality improvement specialists to support their job functions.

These 4 jobs are just a small sample of the new job roles emerging with the nationwide implementation and adoption of EHR systems. These workers could be called by other names, but their collective goals are to integrate EHR sys-

tems with clinical practices and to improve quality of care. In some cases, these roles could be additional duties for existing health care workers, who could transition into new roles through additional training. Indeed, many competencies required in these job roles should be part of the training for the existing health care workforce, to ensure their proficiency in the EHR environment.

Jobs That Will Become Obsolete in an EHR Environment

Because of the change from a paper environment to a digital environment, jobs needed for processing paper medical records and documentation will become obsolete in the future. For example, the need to employ file clerks for medical records will decrease; a manual process will not be needed to collect, index, store, and retrieve medical records. Those workers need to be retrained to take on other roles in the electronic environment. In another example, the job market for medical transcriptionists will mirror the average growth rate of the entire workforce, which is slower than that of jobs in the health care industry. The ease of data entry, use of templates, and adoption of voice recognition technologies have lessened the need to transcribe doctors' dictations into medical documentation.

Conclusions

Digitized health care needs a different workforce. New job titles will emerge to support the change, and some jobs will disappear. Because an EHR is an enterprise information system that will affect all users, additional training on information technology and informatics competencies are needed for all current health care personnel. NCMJ

Xiaoming Zeng, MD, PhD professor, Department of Health Services and Information Management, East Carolina University, Greenville, North Carolina.

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