Considerations When Choosing an EHR System

BY ARUN KAPUR

"Electronic health record" (EHR) is fast becoming a dirty term in retina. We are forced to participate in this technological quagmire. Our field is uniquely challenging: we are both medical and surgical, we have a high volume of patients (that is ever-increasing), we often work at multiple locations, and we use numerous disparate diagnostic modalities that must be properly integrated. Not long ago, I recall a good friend who would pull out his pen and tell me defiantly, "Pravin, this here is my EHR". I laughed, but Uncle Sam is not laughing. We have been told what is good for us and our patients. We must capitulate. In the first of a 2-part series, Aurn Kapur gives us a broad overview of the fundamentals of EHR. As a successful and experienced software engineer and entrepreneur, Mr. Kapur's perspectives will be both informative and valuable as we are forced to negotiate a technological labyrinth.

— Pravin U. Dugel, MD

The use of computer software for medical records is a front-and-center issue for all health care institutions in 2011. On December 23, 2010, the Centers for Medicare & Medicaid Services (CMS) and the Office of the National Coordinator for Health Information Technology (ONC) announced that registration for the Medicare and Medicaid electronic health record (EHR) incentive programs would open on January 3, 2011, creating $44 000 incentive payments per participant physician.

Physicians now are faced with the job of choosing the right software package. There are many brands and technologies to choose from, so this is a daunting task. In this 2-part article, I offer insights on some important components.

I have been a computer software engineer since 1982 and have participated in multiple successful software package projects. Based on my experience, it is important for a physician to understand the progression of software technology so the purchasing decision not only meets the requirements of today but also considers future software design developments.

ARCHITECTURE

Just as in buying a car, it is important to check under the hood to see what you are buying. For software applications, an open architecture foundation is essential. This means that the data are transportable and can easily be modeled to interface with other applications and devices. The most desirable design is an N-tier architecture, which allows components to be distributed in the network providing fault tolerance and scalability. This means that information is not stored on a single server; it can be distributed strategically across the practice enterprise so that large data files or images can be seamlessly placed locally for quick access and fast response without having to rely upon high-quality network connections. You can use public network infrastructure, such as 4G, to access your data from anywhere. N-tier delivers redundancy, mobility, performance requirements, and adaptability to the needs of all size practices.

The least desirable architecture is client-server. In the client-server architecture, components of the application reside on every PC used in the practice, making the architecture inflexible and creating maintenance nightmares. The EHR software application will run only on devices on which the software is installed and only on the version of OS certified by the vendor. When maintenance or an upgrade is required, components of every

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single device where software is installed must also be upgraded at the same time. Version mismatch installed on these PCs then causes confusion and chaos in a medical practice.

SOFTWARE

The software technology required for N-tier architecture is also important. The best technology utilizes open vs proprietary software architecture, enabling the practice to function with other applications. Existing data can migrate easily without disturbing workflow; therefore, mitigating transition challenges to an EHR is simple. Software should work for the practice, as opposed to the practice working for the software. Flexibility is a key required feature because each practice has its own unique way of handling patient flow.

Software should be touchscreen-friendly and offer check box as choices. The keyboard should be used only occasionally, to chart something unique. Software should make the doctor faster and more efficient. Touchscreen technology is easier and faster than using a pen and paper.

Because ophthalmology has both medical and surgical parts, it is important that the software that is chosen deal seamlessly with the medical record requirements of both an ASC and a practice. Practices that deal with paper documents know that there can easily be 10 forms sent to the ASC for scheduling surgery, so it is important that the software vendor offer both an ASC module and an office module, so that booking a surgical case is as simple as the click of a mouse. Moving documents, signing consents, reviewing operation reports and orders, and even patient registration, can be accomplished easily via a browser-based system from any computer location.

ACCESS

Other important infrastructure considerations revolve around how the EHR is accessed by those using it. Many systems have their own proprietary user presentation layer that enforces a code so the software application is required to exist on all the PC/devices to access EHR. This creates maintenance and management difficulties that must be controlled by local information technology employees. Alternatively, the most recent technologies use secure (https) Internet browser as the application presentation layer, similar to that used in online banking. An Internet browser is used, either Internet Explorer (Microsoft Corporation, Redmond, WA), Safari (Apple; Cupertino, CA), LINX (open source), or Android (Google, Mountain View, CA) to access the application. This route provides complete independent access from any computer with an Internet hookup, which represents a significant advantage to the physician. Software is not maintained locally, but is updated via the Internet, so usual maintenance fees are not incurred to keep the system updated. Furthermore, computer hardware can be purchased at any local store. The only requirement is that the computers purchased have either Apple or Microsoft browser programs installed with Wi-Fi capability. Many doctors choose to use iPads (Apple) that can move easily from room to room, substantially reducing the cost of hardware.

SUMMARY

Before deciding on the EHR system that will work best for your practice, be careful to evaluate the work flow, the mobility of the physicians in your practice, and the comfort level of those who will be using the technology. It is a good idea to establish a mix of local (Wi-Fi and wire) and public (3G/4G) network structures that provide seamless connectivity to the application so that when you go live with your EHR system you get the most out of the technology.

In the second part of this series, I will focus on specific functionality issues relating to using computers for the team in the OR facility and office. ■

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