DM Review

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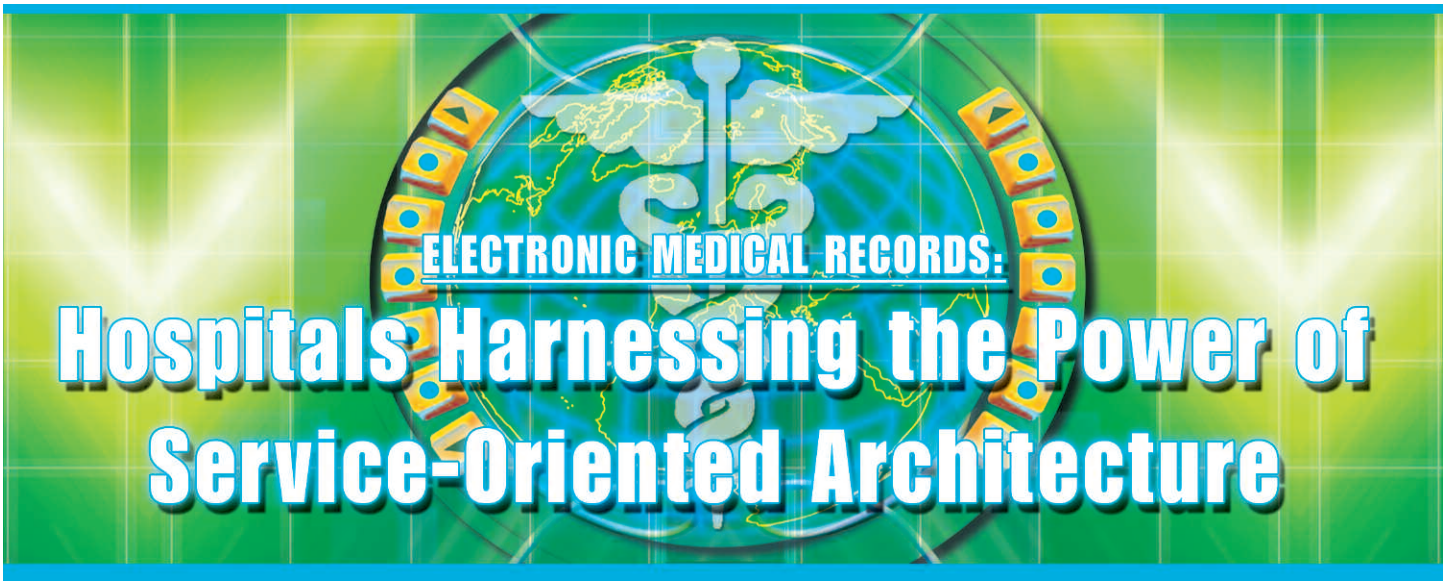

By Kevin Kelley

Summary: Replacing paper with eletronic medical records could help hospitals define the next generation of SOA applications for the health care industry.

When Hurricane Katrina hit, the medical records of most New Orleans evacuees were lost. But the records of veterans who sought treatment in a veterans' hospital after the disaster weren't, because the Veterans Administration maintains electronic medical records (EMR) across its national system.

Nearly all other hospitals nationwide still rely on paper-based medical records to treat patients. Replacing them with EMR could help hospitals define the next generation of SOA applications for the health care industry.

The Stakes

According to a 1999 study by the Institute of Medicine, as many as 98,000 people in America die annually from medical errors – more deaths than from motor vehicle accidents.[1] The same study cites a lack of coordinated care as a major contributor to this startling statistic. When patients see multiple providers, even within the same institution, physicians often don't have access to the patients' complete medical records. The inefficiency inherent in using and sharing paper-based medical records exacerbates this problem considerably.

The Benefits and Hurdles

EMR offers tremendous potential for improving the quality of patient care by making medical records accessible at the touch of a button when they're needed most. While initially implementing such a system would be costly, a study in *Health Affairs* found that broad health IT adoption could produce a savings of $162 billion over time as well as 2.2 million fewer prescription-related errors.[2]

One of the main dilemmas in making EMR a reality is figuring out who will pay for it, because the majority of health care funding comes from the federal government or third-parties, not from the users of the services – the patients – themselves. And because there's pressure to keep costs down on the government side and the insurance companies answer to stockholders, it's difficult for these groups to suggest a significant expenditure now, even if EMR would make health care cheaper in the long run.

Despite these facts, a few hospitals have already taken the initiative on their own to adopt EMR in their facilities out of a commitment to better patient care. But even after a hospital makes this decision, it must still decide how best to implement such a system – and this is the most important decision a health care facility can make during the adoption process.

Some experts estimate that as many as a third of EMR implementations fail. In many cases, this isn't because of technological hurdles, but because of the challenges of implementing such a system from an organizational standpoint. Finding a solution that's effective but that is minimally disruptive is critical.

A Single Platform - or SOA?

The Veterans Administration relies on a central database and most of the prepackaged EMR products on the market today also offer a centralized approach that can be a good choice for some institutions. But such a solution usually requires a hospital to adhere to one data model and to the workflows those packages have built inside of them. And that's where difficulties can emerge.

In many health care institutions, the different departments often work very differently in their processes and procedures. Once a department has implemented processes that work, it doesn't necessarily want to scrap them to accommodate the limitations of a software solution – and clinicians, nurses and administrators don't want to

change how they do things. For such institutions, a centralized approach can create an insurmountable hurdle by forcing departments to work in a way that's radically different than what they feel works best for their field of care.

The University of Texas M. D. Anderson Cancer Center recently instituted EMR and weighed these issues before deciding on an approach based on SOA. As an institution involved in every facet of cancer care, from diagnosis to treatment, clinical trials and research, M. D. Anderson felt that a centralized system would have disrupted all of these different elements without providing a solution that was ideal for any of them.

By choosing SOA and keeping their legacy systems in place, M. D. Anderson was able to achieve the benefits of EMR without organizational hurdles. Because M. D. Anderson is involved in so many aspects of patient care, this implementation can serve as a microcosm for the health care industry as a whole, serving as an example of how SOA could be used to implement EMR for better patient care across the health care professions.

Making Systems Talk to One Another

M. D. Anderson is one of a very few health care institutions in the country so far that have implemented their own in-house EMR system. As one of the top-rated cancer centers in the country, it uses best-of-breed systems within each of its departments. Because these aren't all on the same platform, an SOA approach was critical to getting these systems to work together.

The EMR system has been implemented so that it doesn't affect the data and processes that are already in place in all of the departments. Instead, the back ends of all the different systems have been wrapped with services to provide a standards-based method of being able to get at the data within those systems and interact with the systems as a service.

The Privacy Issue

One of the major issues with EMR is making sure that doctors can access the medical records while those who shouldn't be accessing the records can't. For instance, when a famous athlete was hospitalized at Columbia Presbyterian Hospital in New York several years ago, several hundred unauthorized attempts to look at his data were logged. Major political figures are often treated under an assumed name to avoid this scrutiny.

Ultimately, security needs to be balanced, making information more accessible to the right people. This involves a certain level of trust, but the trust also goes along with records that get audited – and that can raise red flags if a health care worker is accessing the records of a patient not under their care.

While SOA can't solve the privacy problem, it can allow institutions such as M. D. Anderson to keep their existing protections for each individual department in place instead of giving everyone access to a central database. Thus, the privacy risks are no greater than they were before the adoption of EMR.

Growing and Changing With the Times

The packaged solutions on the market, while effective for some, generally leave health care facilities with a more limited ability to change and expand, leaving them reliant on the direction the software company takes the package and the modules they decide to offer.

With an SOA approach, most institutions will still need help with implementation, but SOA can free these organizations from abandoning their legacy systems while also allowing for more expandability and flexibility moving forward.

While it's also possible to add onto a packaged system, it typically ends up being a tacked-on solution. A system created using SOA, on the other hand, can be built from the ground up for the ability to easily facilitate further expansion.

Finding the right partner to help build the environment correctly can help facilities implement EMR faster using a system with the best practices and architecture in place to allow for both future growth and future self-sufficiency.

The Future of EMR: Harnessing the Potential of SOA

While EMR is in its infancy, its continued growth is inevitable. Even President Bush emphasized EMR's importance to avoid medical mistakes, reduce costs and improve care in his 2004 State of the Union address. But it's unlikely that the government or insurance companies will fund a national database anytime soon.

Instead, world-class health care facilities such as M. D. Anderson have created their own EMR infrastructure to provide better care to patients and maintain their status as preeminent health care institutions.

Because M. D. Anderson has used an SOA approach that allows the accessing of data where it already sits, the hospital could potentially extend these records to other hospitals in the future. And because other hospitals are likely to follow suit to minimize disruptions to their day-to-day functioning during their embrace of EMR, this could someday result in SOA-based information-sharing that spans the health care professions.

While competition between organizations has hindered the adoption of SOA information-sharing in other industries, this is less of a problem in health care, where access to medical information benefits facilities and patients alike. As a result, the widespread adoption of EMR could lead to an idealistic implementation of SOA that could reduce the rate of medical errors, and thus quite literally save lives.

References:

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2. James M. Walker. "Electronic Medical Records and Health Care Transformation." *Heath Affairs,* 2005.

Kevin Kelley is the chief technology officer of the Avanade South region. He is responsible for guiding Avanade's regional technology vision as well as its go-to-market solutions. He is a senior enterprise architect for their largest and most complex client engagements in the Americas. Kelley has 18+ years of experience working on mission-critical, transaction intensive software and cross-platform interoperability. He may be reached at kevinke@avanade.com.