

ROUNDTABLE

THE STATE OF THE HEALTHCARE IT INFRASTRUCTURE

For any industry to deliver on its business promise it needs an infrastructure that supports quality and allows for growth. The healthcare industry is facing a convergence of pressures to use information technology to improve the quality of care and reduce cost. The American Recovery and Reinvestment Act calls for \$19.2 billion in funding to at first promote and, subsequently, mandate the use of electronic health records. But the government is hardly the only healthcare stakeholder to question the value provided by the patchwork nature of the nation's healthcare IT. Only a fraction of the nation's hospitals are using point-of-care technologies like computerized physician order entry or medication bar coding. Those that do use such point-of-care systems do so in isolation, their data walled behind proprietary software from EMR vendors. Are the tools of healthcare technology an adequate foundation for the performance demands that are no longer far away? *HealthLeaders* convened a panel of experts to ask for their insight on whether the industry can build on what exists, or whether a new, more innovative healthcare IT infrastructure that improves data at the point of care is required.

Panelist Profiles



JIM MOLPUS, editor-in-chief, HealthLeaders Media, Brentwood, TN, moderator



MICHAEL S. WARDEN, senior vice president of information technology and chief information officer, Banner Health, Phoenix, AZ



JOSEPH L. DEVENUTO, vice president of information services and chief information officer, Norton Healthcare, Louisville, KY



WILLIAM W. STEAD, MD, associate vice chancellor for strategy/transformation & chief information officer, Vanderbilt University Medical Center, Nashville, TN



BOB ROSSI, vice president of healthcare sales, CDW, Vernon Hills, IL

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Roundtable Highlights

HEALTHLEADERS: *One interesting historical analogy that comes to mind today is when the government took a disconnected network of back roads and created the interstate highway system in the 1950s, which had lasting impact to improve commerce across many industries. Give us an overall assessment of the state of our healthcare IT infrastructure now. Does it begin to enable the vision for healthcare that the industry, patient, and government envision?*

JOSEPH DEVENUTO: The stimulus funds are propagating the current system. They are not forcing an innovative system. For that reason, it's hard to say this money is going to fix healthcare. At the same time, do we need to rip out what is in place and put in something new to move forward? Yes and no. There are companies out there that put overlays on top of mainframes, making it possible for them to present a contemporary application on existing infrastructure. So, there are ways to make old applications contemporary and provide value without having to rip out the guts.

MICHAEL WARDEN: The stimulus program presents huge challenges for everyone. There will be a lot of money available to be spent wisely or not spent very wisely. The central issue is whether or not you have a vision that will work. In healthcare there are some organizations that have a long-term vision and

are marching toward a goal that is better than where they are today. There are many organizations, however, that are just installing applications on demand without a clear goal. At Banner we have a goal of implementing information technology in a franchise model approach that all 22 of our hospitals subscribe to. We're implementing the same set of systems, a broad suite of integrated applications, all run out of the same database, towards the same enterprise goals. So at least we have a vision that we all share and we are all headed in a common direction. As a result, we can achieve huge economies of scale, and we can move very quickly as a result.

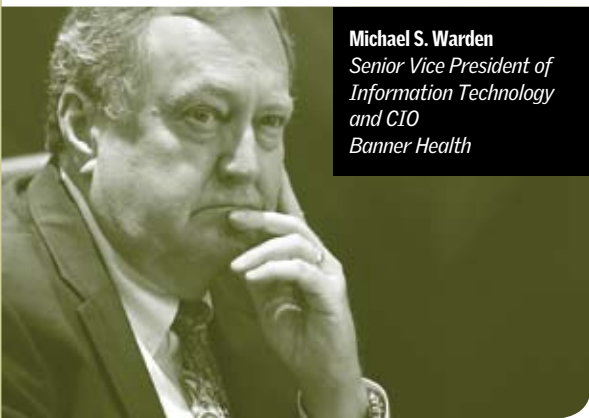
WILLIAM STEAD: At the heart of the Obama commitment is an expectation that this deployment will increase quality and decrease the total cost to the economy. Unless people are extraordinarily careful about how they deploy, the technology will not get those results. The history of this industry is that although we get improvement with IT, in most cases we do not get the level of improvement to justify both the cost and the effort. That is why healthcare IT has become this sort of commodity space where people compete over how far down they can get their contract costs instead of how high up they can get their value. So we are accelerating a largely unsuccessful industry. But don't equate my concern about the bulk of efforts as they have been carried out with what I believe is possible, even in the short term, if it is done right. Unfortunately, I believe healthcare would largely like the government to provide the money and the technical people to put stuff in and just get the results. How you do it matters. The CEO doesn't want to hear that. How you do it is a business decision and they jolly well better put their time into

understanding it and making sure it is done right. But that is not the mindset of the average hospital CEO right now.

BOB ROSSI: One of the greatest challenges hospital executives face is interfacing with their clinicians. The long-term success of a technology initiative depends on the alignment of priorities driven from the dialogue, not simply acquiring and deploying technology without solving real patient care issues. One of the challenges I see is that the stimulus plan is not designed to fund providers that are achieving improved clinical outcomes; it's really just an impetus to acquire the technology. As a result, a lot of vendors will spend the next two years chasing stimulus dollars and making a lot of promises they may not be able to deliver against.

HEALTHLEADERS: *But we already know that simply installing point-of-care tools for technology's sake has not worked in healthcare, don't we?*

STEAD: Leapfrog developed a tool that would let individual sites test whether their deployed CCHIT-certified CPOE does what it is supposed to do. So for the people who have lived through getting this thing in and getting it used—does it do what it is supposed to do? Does it stop medication errors, for example? The answer across the country is well under half the time. The reason is because the decision-support content alerts so often that everyone turns it off. To make it work takes a local effort, which is what Vanderbilt does, that says "when do we want to alert the clinical team?" So what I try to get people to understand is that the results people want take a change in role, take a change in process, and they take a change in the technology. If we do the technology without the other two it almost always fails. People are



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increasingly beginning to understand this. Four years ago almost no one understood this.

HEALTHLEADERS: *Why doesn't healthcare get the value out of these IT tools?*

STEAD: I believe that a key to our trouble is our undue focus on automation. The computational technique matters. Automation is where we program a system so that it does something over and over again the same way. That works very well for small, well-defined systems. So it has its place in order management, billing, robotics, etc. But automation does not work well when what we are trying to do is manage extraordinarily complex information and extraordinarily complex processes. That takes other computational techniques that healthcare largely has ignored. If you look at the power of communication technology to support social networking and mass collaboration without anybody programming the process, we don't take advantage of that in healthcare. And also, data mining, how you use algorithms to recognize relationships amongst disparate data. If you go to other industries, you will see they use these other techniques much better than we do. They cost a fraction of automation technology.

WARDEN: In healthcare we have traditionally been a back office function, so we have been processing the bills, processing the charges, tracking the records,

and counting stuff. More and more we are starting to see systems that are actually bringing intelligence to the clinical process. For example, we run an eICU system that tries to look at changing clinical parameters and tries to predict when things are going well and things are going poorly ahead of time so we can do something about it. The problem is that you start alerting physicians who are not used to having alerts in their face and it becomes very tiresome and irritating and challenging to our physicians, so trying to strike that balance where you only identify real problems is a challenge.

ROSSI: A lot of providers are automating just to automate, and are really missing an opportunity to include caregivers in the product selection and deployment process. Increasingly, we're seeing caregivers take active roles on the IT steering committees, offering input on process automation and point-of-care deployments. If a partnership is not established early on between the clinicians and the IT department, an organization will run a great risk of allowing a great deal of technology gear sitting in the corner collecting dust.

Interoperability issues

HEALTHLEADERS: *Interoperability is not a new issue for these systems, but with renewed pressure, are we reaching a point where the infrastructure has to be interoperable?*

WARDEN: There has never been an incentive to have any two vendors' products work with each other because if you made it too easy then, in fact, you didn't have to buy everything from one company. That has made it very difficult for one clinical business to exchange information with another. Gosh, it has been more than 20 years since we started to figure out in a community sense how to share information

between physicians and hospitals. It has been very challenging, and even today there have been very few real successes. If there is one thing the ARRA could do, it is really to require the ability to exchange information. Unfortunately, the government has not taken a role in facilitating the standards for doing so. So, we will still be faced with writing cumbersome interfaces and figuring out how to share data with one another.

DEVENUTO: At the high end, you have to decide exactly what type of information you are trying to share. You also have to decide how much information you actually want to share or if you would prefer record locators. Additionally, you need to determine how much the data source is trusted so the clinician feels comfortable making the clinical decision. Being able to actually share information is really a low-level issue; we have been writing interfaces forever. The hard part is deciding what you are going to do with the information once you have it.

STEAD: I do believe the interstate analogy is the right analogy. Look at how little we had to standardize to make the interstate system work. We didn't have to say anything about the cars or anything about the content of the trucks. We didn't have to talk about "meaning" to actually establish commerce. You will find the same thing is true in healthcare IT.

ROSSI: Without clear goals for what interoperability really means, I believe the effort will be slow-moving in the absence of federally-mandated standards. Software application advocacy groups will launch intensive lobbying efforts against instituting a very strict set of standards, as this is contrary to what has potentially made their specific businesses successful in the past. It really shouldn't be much of a surprise to anyone that there are so many siloed applications today.

Bob Rossi
Vice President of
Healthcare Sales
CDW

Assessment tools

HEALTHLEADERS: *If we really took a look at the state of healthcare IT infrastructure that many hospitals have—right down to the capacity of their networks to the point-of-care tools they have—would we see a pretty scary patchwork? To those healthcare IT leaders out there looking to assess where they stand, what are some tools they might use?*

ROSSI: We work with a variety of providers, many of which are not nearly as automated as the organizations represented in this room. To better help organizations manage their infrastructure, we offer a variety of assessment services—including security, network, power, and virtualization. When considering a virtualization initiative, tremendous opportunities exist for savings on multiple fronts. Savings can accrue not just from reducing the physical costs of managing 5x to 20x number of boxes in the data center, but also from drastically reducing labor and power costs. There are so many executives we speak with who tell us, “I am nearly out of power in my data center. We are going to this new site and I can’t add anything. Our new data center isn’t ready for six months, what do I do?” Wide-ranging virtualization assessments can resolve a lot of those problems. Another critically important component is the need to conduct an annual security assessment. IT executives understand the fact that a “bullet proof” network just doesn’t exist. There are always weak links in the armor that can be addressed and prioritized. With the amount of PHI being converted into an electronic format, the temptations for hackers to access this data will only grow. We saw a shocking example last week of a hacker stealing more than 8 million patient records from a government Web site and demanding a \$10 million ransom.

DEVENUTO: One of the things we have always said is that we don’t want the IT infrastructure to be a critical path item in any of the business initiatives the

company wants to execute. You have to continually look for, and continually carve out, some part of your budget to “care and feed” and keep the beast alive so that everything else can happen. This is critical, in my opinion, because as soon as the infrastructure does not work, I know whose BlackBerry™ is going off!

WARDEN: We need to build with the future in mind because whatever decision we make today about the infrastructure, we want to be able to look back in 10 years and be comfortable that we made the right decisions. We have to look far enough into the future to make sure we are not putting ourself at odds with what everyone else will do. It’s a little like Betamax: It was a great system but you couldn’t find the tapes anymore.

STEAD: I would ask people to have a portfolio approach. Nothing works without the communication infrastructure, which is not the most inexpensive thing now, but it has got to work. If nothing else works I’d at least have a good communication infrastructure so people could access external information to help make decisions. Second thing I would do is aggregate information to help people make decisions. To simply aggregate information is dirt cheap. Then I would decide which processes I wanted to automate. I would have a portfolio where I understood that automation efforts would be continuing over 20 years.

The storage climb

HEALTHLEADERS: *Storage demands in healthcare IT have only gone up and up in recent years. Can we keep up?*

WARDEN: What is driving the storage capacity today are clinical images. Probably 60 or 70 percent of our storage growth is in the area of imaging. We are seeing pressures to increase the capacity of storage all the time, and we

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have to figure out some way to tier the storage so that you have some expensive, high-speed storage on the front end for the images and data you want to get to quickly, then you tier off into lower speeds and lower costs for your older storage. Pretty soon I think we will see solid state storage replacing rotating storage, which is probably five years away.

DEVENUTO: Keep in mind that “high speed” is 0.001 second response time and “slow speed” is 0.1 second. For most people this is negligible. In the ’70s and ’80s, all we stored was billing information. Then we started adding lab and pharmacy information. Now we are adding nursing documentation and CPOE. In addition, we are beginning to automate the HR process so I am storing massive amounts of personnel data that used to be in file folders. This means we are growing 5 percent a month in our storage requirements. Our nightly backup is between 8 and 10 terabytes, and we are just a small not-for-profit system in the Midwest.

ROSSI: As you bring in HR and other departments, the common issue IT managers face is how to manage the proliferation of PACS and large, multi-megabyte files across hundreds of desktops and local folders. The tiering approach is key to reducing the overall cost of managing your data. In addition, providers are benefiting from the average prices for disks, which are continuing to fall. The challenge that most organizations are facing is around a 50%-100% year-over-year increase in

demand. And to round out a storage strategy, IT managers can implement disk to disk to tape backup to save less commonly used data.

Too many devices?

HEALTHLEADERS: *Supporting all of the devices that your systems use—particularly on the wireless side—has to be daunting. How do you assess which tools you will support? How will you keep it secure?*

WARDEN: We look across the Banner organization at what kinds of applications we want to support, and then determine what kind of devices that will take. We define a standard PC for our business users and a variation of that for our clinical users. We only support a few different types of handheld devices. The guiding principle is that if we roll out a new application at Banner, I want it to work on every device we are currently using.

ROSSI: If we can build an early partnership with a healthcare organization to establish that standard and forecast what those cycles will be, we can reduce a lot of the cost of the initial purchase. Moving beyond the first acquisition, organizations can reap additional savings if they are securing and troubleshooting the devices in-house or outsourcing those responsibilities to a third party—the key in either case is to establish a standard platform and a manageable number of hardware elements. Although establishing a standard among different constituencies with competing interests can be daunting, having strong standards in place will allow organizations to quickly determine if a new application will work on their existing system.

STEAD: Vanderbilt is an interesting challenge because of the intersection of clinical and academic activities. For many years we did tightly standardize when that was essentially the only way to make things work. Virtualization opens up another approach. We require

encryption if you are doing certain things, but not others. In essence, we have got to accommodate whatever consumers have for our students and faculty, and increasingly for our patients.


Starting over?

HEALTHLEADERS: *Does the infrastructure that we have now contain some salvageable elements or are we going to have to deconstruct and start from scratch?*

STEAD: We don't have to deconstruct and start from scratch. Our current approach to healthcare IT tends to cause people to keep ripping out and replacing what they have just to get something new that integrates. Instead, we need to measure and manage to specific improvement goals, and we need to let those goals drive what we do. We need to let the time to achieving those goals drive the decisions we make. If we make sure our communication networks and storage infrastructures scale, and if we make sure we are beginning to use other kinds of mainstream, nonhealthcare IT to support some of our aggregation and visualization capabilities, and if in that process we are allowed to shrink our use of automation technologies to the small system components they handle very well, we don't need to throw them all away.

DEVENUTO: There is value to that transactional-level data to the person involved in that transaction. On the financial side we tend to have good transactional data from invoices. However, there usually is a business intelligence tool that sits on top of it so the CFO can look to see if the organization is doing okay. We have not created that business intelligence tool on the clinical side that will allow the doctor to say “for this patient at this time, the physician is doing the best he can for him right now,” and then offer suggestions for improving what might be done.

WARDEN: All information technology decisions ought to be made with the end in mind. The goal ought not to be to implement a system but to implement an improvement in clinical processes or outcomes. Then you can ask yourself, what outcomes are we looking for and what applications will it take to accomplish that? I have an analogy I use at Banner sometimes. I collect these intricately-carved wooden Hopi Kachina dolls. The artists use pocketknives to make them. They don't use fancy tools; they use basic tools but they know how to use them very well. The tools we are fielding in healthcare have to be good enough for experts to use, but the way we use them is really the most important aspect. And if you are inundating them with too much irrelevant data, then we are just in the way.

ROSSI: I subscribe to Mike's theory of starting with the end goal in mind and working backwards to outline the implementation processes. Too often, providers believe that simply buying the point solution or product will solve all of their clinical objectives. But starting with the final goal in mind and mapping out the necessary processes, applications, and change management elements needed to achieve those objectives is a much sounder strategy. If the IT and senior management leaders can work backwards from the ultimate objective, they'll be in much better shape. 

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