

\$7.00

June 2008 • Vol. 32 No. 6

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## 2008 Infection Control Buyer's Guide

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# Champions for success cover bases with infection control bundles

by Jeannie Akridge

All eyes are on infection control as hospitals anxiously await regulations soon to be enacted by the Centers for Medicare and Medicaid Services (CMS) in which they will no longer be reimbursed for certain hospital acquired conditions (HACs). Infection control practitioners and clinicians are stepping up to the plate and being applauded for their efforts to reduce rates of healthcare acquired infections (HAIs) and other preventable errors. They're helping to prove that reaching the elusive "zero infections" target is in fact attainable for extended periods of time, if not sustainable forever.

Leading infection control expert William Jarvis, M.D., who worked with the Centers for Disease Control and Prevention for 23 years, told *Healthcare Purchasing News*, "Depending on the patient population, getting to zero may be more challenging, but I think it really needs to be the goal for everyone. We have a number of studies now - out of Johns Hopkins; Michigan, where virtually all the ICUs in Michigan participated in the Keystone Project; as well as a number of hospitals that have participated in the Institute for Healthcare Improvement (IHI) collaborative - where they have been able to get their rate of central venous catheter related bloodstream infections in their ICUs down to zero."

He added, "CMS has identified nine different conditions that they're not going to pay for as of October 1, unless they're present on admission. And one of them is vascular catheter related infections, so I think it is going to put a lot of pressure on hospital personnel to reduce these infections and reduce them not just in the ICU but in the hospital in general."

Mark E. Rupp, M.D., medical director of the department of healthcare epidemiology-infection control at the University of Nebraska Medical Center (Omaha) foresees that the CMS quality improvement measures will ultimately benefit ICPs. "I feel that the CMS reimbursement rules are helping to focus scrutiny on these infections. Many catheter-associated infections can be prevented and I think the CMS rule change is going to have a positive effect by reinforcing

the preventive efforts that we're trying to spearhead."

David Parks, general manager, global business management, Kimberly-Clark Health Care noted, "With the ever increasing state-level legislation and focus on mandatory reporting of healthcare-associated infections and the trends in pay-for-performance, I believe the role and objectives of the materials manager will change significantly over the next year or two. There will be

a greater focus on investing in prevention solutions to reduce the costs associated with adverse events such as VAP and SSI."

Experts agree that in order to survive in this new pay-for-performance environment, it will no longer be enough for hospitals to simply meet the status quo when it comes to quality and safety standards.

Kathleen A. McHugh, R.N., BSN, chief executive officer of the Association for Vascular Access, noted, "I think that the expectation that you go into a hospital and get an infection is based on the fact that we don't have high expectations. I'm not sure that zero is sustainable forever. People need to be constantly reminded to be hypervigilant," she added, "It's this lack of attention. Two hundred years ago we were told that washing hands would reduce 90 percent of all complications. And here we are in the year 2008 and all of a sudden hand washing is not being done on a regular basis."

David Shulkin, M.D., president and chief executive officer for Beth Israel Medical Center (New York City), credits early pioneers for efforts to help facilities move beyond accepted boundaries. "I think that there has been a mindset that frankly the University of Pittsburgh as one of the leaders helped break through. The way that clinicians had looked at things is that you look at the average and you try to be better than the average. Very few people had thought about the goal should be zero, not being below average. And I think that the University of Pittsburgh in not ac-



A nurse at Sutter Roseville sets up a PICC line tray

cepting the average scores but really shooting for zero, helped the industry have a mind shift in terms of, the goal should be zero."

"We're a top performing hospital nationally," noted Steve Lawler, president, Pitt County Memorial Hospital, Greenville, NC. "We're well within the 90th percentile, but that last 10 percent is the hardest. You try to reinforce that every patient is important to us so therefore we need to work extra hard to get to that Zero. I think that's what you shoot for. And even though it may be tough and it may be long in coming, that you're not satisfied until you get there and then once you get there you look for the next big thing."

### Zero-barrier breaking success stories

HPN talked with several trend-setters who demonstrated what it takes to break the Zero barrier.

Sophie A. Harnage, BSN, R.N., has led her nursing team at Sutter Roseville Medical Center (SRMC), Roseville, CA, on a two-year winning streak of zero catheter-related bloodstream infections (CRBSIs) with every patient who is managed by an innovative central line bundle. Her work, including details of the seven-practice bundle, was featured in the December 2007 issue of the *Journal of the Association for Vascular Access (JAVA)*<sup>1</sup>.

Under the leadership of Brian Koll, M.D., infection control chief, Beth Israel Medical Center has also had success with implementing a bundle to eliminate central line-associ-

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ated BSIs, reducing rates by 95 percent institution-wide, and maintaining zero CLABs in several units for greater than a year. While costs to implement the program were \$32,000, the hospital avoided \$1.4 million in charges to treat patients with CLABs.

Community Health Network in Indianapolis, IN, was part of an initial team from VHA Inc. and IHI that developed a ventilator-associated pneumonia (VAP) prevention bundle which is now in place throughout their five-hospital system. As a result, two of the system's adult ICUs have had zero incidence of VAP in four years and the five-hospital system has achieved zero incidence of VAP for one year.

Pitt County Memorial Hospital (PCMH) significantly reduced the rate of VAP due to methicillin-resistant *Staphylococcus aureus* (MRSA) in the Surgical Intensive Care Unit (SICU) with the implementation of an active surveillance program for MRSA. The facility previously practiced high-risk screening, but according to Lawler, "we believed it was important that we screen all patients coming in to create the safest environment."

With the goal of rapidly identifying, isolating and treating patients with MRSA to prevent transmission to other patients, in February 2007, PCMH - led by Keith Ramsey, M.D., medical director for infection control - began a hospital-wide (universal) active surveillance for MRSA using the BD GeneOhm MRSA real-time polymerase chain reaction (PCR) diagnostic test. With laboratory results back in three to four hours versus two days, PCMH is able to test about 150 patients a day. Subsequently the MRSA VAP rate in the SICU decreased 68 percent during the initial 12-month intervention period, from 1.74 to 0.54 per 1,000 ventilator days, and there have not been any VAPs since June 2007 in the PCMH SICU.

Peggy Thompson, R.N., BSN, CIC, director of epidemiology at Tampa General Hospital (FL) said that after they adopted bundled products usage, "We started really making changes in our (VAP) percentages at the end of 2005, that's when we really focused on the VAP bundle and implemented a mouth care kit from SAGE Products." The mouthcare kit has a toothbrush with suction, antiplaque solution, suction catheter, perox-a-mint solution, alcohol free mouthwash, oral suction adapter, toothettes with and without suction, and mouth moisturizer, designed to provide mouthcare every 2 hours.

With this change, Thompson said, "We reduced our VAP rate by 42 percent, which was a statistically significant reduction.

Thompson continued, "In August 2007, we added the usage of Kimberly-Clark's

MICROCUFF Endotracheal Tube along with the mouth care kits and other VAP bundle practices. At the end of 2007 we found that when we compared VAP rates in 2006 to 2007 we had achieved a 54 percent reduction. We then went back and compared January through July 2007 rates, to August through April 2008 to determine what if any effect the implementation of the new ET tube had made. We discovered that we had achieved a 39 percent reduction in VAP, largely attributed to the new ET tube." Since August 2007, Tampa General has had three months with zero VAP rates. Thompson said this was a significant accomplishment because they were averaging the use of 75 ventilators a day during those zero rate months.

## Bundles - What are they and why do they work?

At the heart of nearly every successful HAI reduction program is a bundle, the kind endorsed by the IHI and others.

Deborah Dix, R.N., Sutter Roseville Cancer Services director, described a bundle as a "combination of products and procedures that consistently and reliably give you an outcome."

The Association for Vascular Access (AVA) is working with the Association for Professionals in Infection Control & Epidemiology (APIC) to develop a model central line bundle. "The whole notion of CRBSIs has been a problem for many years, said McHugh, "even making decisions on which vascular access device to use has been rooted in the incidence of CRBSI, based on whether it's a non-tunneled central line, which is the highest risk, to an implanted port, which is the lowest risk."

Baxter Healthcare sponsored a symposium at the 2008 Society for Healthcare Epidemiology of America (SHEA) Annual Scientific Meeting titled, "Battling Catheter-Related Bloodstream Infections: What has worked; What is now needed?" Panel moderator Robert Weinstein, M.D., chair, infectious diseases, Stroger (Cook County) Hospital, Chicago, described the measures that should be part of any program to help prevent CRBSIs:

- Performance measures from HICPAC 2002 BSI Prevention Guidelines
- Educate personnel
- Remove unused catheters
- Use chlorhexidine for site prep and care
- Use maximal barrier precautions for CVC insertion
- Use a check list to insure that the performance measures are followed
- Empower nurses to stop CVC insertion if guidelines are not being followed.

Dr. Weinstein noted that the above measures "prevent the early onset of skin/in-

sertion site related BSIs (the 'extraluminal' pathway of infection) and prevent two-thirds or more of BSIs, up to 100 percent."

The central line bundle implemented at Sutter Roseville included: Optimal site selection using ultrasound guided insertion; full barrier precautions; a central line dressing kit that includes ChloroPrep (Cardinal Health), BioPatch disk with CHG (Johnson & Johnson), optional Statlock, and 3M Tegaderm Transparent Dressing (3M Health Care); replacement of positive pressure connectors with InVision-Plus Neutral IV Connector System (RyMed Technologies Inc.); a clear and defined technique of cleansing the septum connector; clearly defined flushing protocols; and daily monitoring of PICCS.

"It's not like we made just one change and it worked," explained Dix. "We developed an entirely new process that works together as a complete package. We don't know which [element] makes the greater difference. We just know the package resulted in a successful outcome."

Agreed McHugh: "No one thing as a standalone probably would have worked, but everything together works in synergy, because [they're] covering all the bases."

Hands-on intensive training was integral to the Sutter Roseville bundle with PICC nurses rounding to the bedside daily. Dix believes that meticulous daily monitoring and site checks are key to their success. "We can identify problems early. And we create a relationship with the nursing staff [and physicians] so that they feel very comfortable coming to us with questions and problem solving."

According to Dan Kidwell, network director of neuro sciences and pulmonary outcomes, Community Health Network, components of the vent bundle, developed in conjunction with VHA and the IHI as part of the Idealized Design of the ICU collaborative, includes keeping the head of the bed elevated to 30°, appropriate sedation, oral care, assessment for the ability to extubate the patient, DVT and PUD prophylaxis. Community Health Network also utilizes other innovative and cost-saving measures throughout their system in what Kidwell calls their "recipe for prevention of VAP". With laser like focus, Kidwell and the Community team set out to eradicate VAP from their health system by looking at processes, protocols and equipment, challenging the status quo and implementing ground-breaking ideas along the way.

"I would tell every institution that reads this, that they need to follow the vent bundle because it is a good base," said Kidwell. "There's evidence to support it. I would also tell them that it's a very comprehensive view

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that they've got to take because it is now understood that VAP is avoidable. They've got to look at the culture of their organization, instill the belief that they can not only get to zero, but perhaps can eradicate VAP through the empowerment of staff and leaders to look at their environment and make change. By integrating education, cultural transformation, staff empowerment, and even instituting technology adaptation, those things can completely change how you work."

At Beth Israel Medical Center, compliance with bundle practices is enforced with kits that contain the necessary components for safe central line insertions. Dr. Shulkin explained, "We make this easier for the clinicians by putting everything together into one centralized kit, which includes maximal barrier precautions plus an applicator and protective disk with chlorhexidine gluconate."

Sources related the importance of a checklist in ensuring consistency. "The primary thrust of any bundle is a 'checklist', borrowing from the airline industry," said McHugh. "If everybody does everything they're supposed to do there will be no errors."

Added Dr. Jarvis, "If that checklist is used at the time of catheter insertion, then if a bloodstream infection occurs, you can go back and look and see if those processes were all done correctly. And if they were, then perhaps it was a CRBSI that was inevitable."

McHugh emphasized the need for basic hygiene and aseptic technique in preventing CRBSIs. "While there's a lot of technology out there and there are a lot of good products - there are hundreds of good products - washing hands and using antiseptics

when accessing a central line, that's the most important thing."

Dr. Jarvis discussed the need to 'scrub the hub' in order to maintain sterile technique. "Often times you see clinicians when they manipulate a catheter, they'll take the needleless connector at the end and then they'll swab it with alcohol for about one second and then disconnect it. Well, that's insufficient," he explained. "There was a study by Dr. Dennis Maki that showed that if you did that for literally five seconds to ten seconds, that almost 70 percent of them were still contaminated. So you need to have probably at least a 15 second scrub with either alcohol or chlorhexidine whenever you manipulate that needleless connector."

Dr. Rupp of the University of Nebraska recently led one of two studies presented at the 2008 SHEA Annual Scientific Meeting that evaluated 3M's new Tegaderm CHG IV Securement Dressing. Dr. Rupp's study<sup>2</sup> compared the 3M Tegaderm product to the facility's standard transparent dressing and concluded that "the Tegaderm CHG dressing containing a chlorhexidine gel pad is an innovative means to potentially minimize CA-BSI", and also that "the Tegaderm CHG dressing is well-tolerated and judged to be superior to the comparator dressing with regard to catheter securement and overall satisfaction." Dr. Rupp commented that while additional studies are still needed to determine if the 3M Tegaderm dressing does indeed reduce BSIs, "all of these preliminary studies are very optimistic. They're very reassuring that the dressing performs well and does have some good microbiologic effects."

## Leading change management

Support from the top is essential for any successful infection prevention program, said Dr. Ramsey. "First of all you have to have administrative support. Secondly, you have to have buy-in from your staff, physicians and nurses."

A successful HAI reduction program also needs a champion for that change as well as empowerment of staff and clinicians. Said Dr. Shulkin, "We have really empowered our staff - every nurse, nursing assistant, housekeeper, physician - any member of the team who sees anybody who is not using an appropriate kit for insertion, or violating one of the infection control practices can declare Red Rule, and that can stop the insertion process in its tracks so that every healthcare team member has the power if they see something that puts a patient at risk to stop the process. And they know that they will be supported in this."

Dr. Weinstein advised, "Create high expectations from staff, create a culture of safety, educate and hold staff responsible for their actions and patient outcomes, treat HAIs as internal sentinel events that trigger an analysis of what happened and what was preventable. Don't settle for less." **HPN**

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