

## FEATURE STORY

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# target: zero hospital-acquired infections

Hospital-acquired infections can attack an organization's bottom line. Here's how to combat the problem.

### AT A GLANCE

- > Hospital-acquired infections (HAIs) take a significant toll not only on patients, but also on a hospital's bottom line.
- > By taking a zero tolerance approach to HAIs, hospital leaders can improve patient safety and financial performance.
- > Eliminating HAIs requires clear goals, a committed leadership, access to resources, a best-practice mindset, effective people management, and ongoing vigilance.

Hospital-acquired infections (HAIs) take a significant toll on the quality of life for affected patients and their families. HAIs affect nearly 2 million patients each year and contribute to nearly 100,000 deaths. And until recently, HAIs seemed to be unavoidable.

However, as patients, consumer groups, and government payers focus increasingly on healthcare quality, more attention is being paid to not only the human toll of HAIs, but also the financial toll. Because HAIs contribute to excessive risks of complications, hospital stays, and death, they also contribute to excessive hospital costs. A 2006 MedMined study of 1.69 million admissions at 77 hospitals concluded that patients with an HAI reduced overall net patient margins by more than \$5,000 per infected patient. Research at some hospitals, such as Allegheny General Hospital (AGH) in Pittsburgh, indicates that particularly harmful HAIs can result in an average \$27,000 in unnecessary costs per patient. The recent decision of the Centers for Medicare & Medicaid Services (CMS) to stop paying hospitals for the added costs of treating patients for certain preventable conditions will increase the financial burden on hospitals that fail to reduce these events.

HAIs also create tremendous opportunity cost. Patients with HAIs stay in the hospital three to four times longer than those without HAIs. That's akin to one patient using four beds instead of one. HAIs tie up patient flow and remove opportunities for new admissions.

U.S. hospitals should take aggressive steps to eliminate HAIs. The good news is that progressive hospital leaders across the nation are proving that

setting ambitious goals and targeting zero HAIs can improve patient safety and reduce costs.

### The Allegheny General Hospital Story

In 2003, AGH started an ambitious journey to eliminate a particularly harmful and costly HAI—catheter-related bloodstream infections (CR-BSIs)—in its coronary care unit (CCU). A CR-BSI is an infection caused when bacteria are introduced into a patient's blood stream due to improper catheter insertion. Like most hospital executives, AGH's leaders regularly reviewed the hospital's HAI rates and found that its rate of infection was average: 5.1 infections per 1,000 patients. For a while, AGH's leaders concluded that a certain number of HAIs were unavoidable. But when they looked beyond the numbers, they realized the statistics meant that in one year in AGH's department of medicine intensive care units (ICUs), 40 inpatients were infected. CR-BSIs were costing AGH up to \$27,000 per patient in 2003 alone—more than \$1.5 million for 40 patients. AGH's leaders began to feel financially and morally obligated to take action. And they did.

The result? Eventually, AGH's CCU went 15 months without a single CR-BSI, and its trauma unit (where patients are arguably most at risk)

CFOs can help lead and reinforce this effort by ensuring that staff at all levels understand the significant financial toll that HAIs take on the hospital's bottom line.

went 16 months without a CR-BSI. The lessons learned in these units have since been transferred to other ICUs at the hospital, including neurosurgery, cardiothoracic surgery, and general surgery. Hospital executives took this initiative, which started on a small scale, up through the entire hospital and saw infection rates plummet on general medical and surgical floors, as well.

AGH's pursuit of no HAIs (in just two HAI categories) saved an estimated \$2.2 million in two years. And AGH is not alone. HAI elimination efforts at other hospitals have driven clear savings. Barnes-Jewish Hospital, a 1,300-bed teaching hospital in St. Louis, saved nearly \$2.5 million in one year through its HAI elimination program, which targeted four HAI categories. Results like these make a compelling argument for hospital

### Calculating the Value of HAI Elimination at Your Organization

1. Select one of the following options for the population to be analyzed:
  - a. A number, such as 10 patients who acquired CR-BSI
  - b. A class of HAIs for the past year (Include any case where a payer was billed for any service related to an HAI. Do not include a case if the primary cause of admission was for an infection. Do include readmissions for HAIs.)
2. Identify the actual or estimated reimbursement for each case.
3. Identify the total costs associated with the case, based upon activity-based cost accounting, if available.
4. Identify the costs attributable to the HAI. This step requires clinical and financial expertise to identify that services provided were attributable to the infection and the cost of these services.
5. Calculate the gross margin for the case by subtracting the expenses (3) from the reimbursement(s).
6. Compare the gross margin for the case with the gross margin of similar cases without an HAI, matched for age, principal diagnosis, and admission severity.

Source: Murphy, Denise, and Whiting, Joseph, *Dispelling the Myths: The True Cost of Healthcare-Associated Infections*, Washington, D.C.: Association for Professionals in Infection Control and Epidemiology, Inc., February 2007.

leadership to identify and quantify the impact HAIs are having on their bottom lines.

**Next Steps for CFOs**

Dozens of hospitals across the nation are witnessing results similar to those experienced by AGH and Barnes-Jewish Hospital. Leaders at these hospitals have set ambitious goals, and they have identified and shared recommended practices that can help other hospitals. Here are clear steps CFOs and other hospital leaders can take to support HAI prevention.

*Work with your infection prevention (IP) team to quantify the economic impact HAIs are having on your organization.* The degree to which the cost of HAIs erodes an organization's bottom line can be surprising. Understanding the true cost of HAIs is critical to an executive's ability to fully appreciate the ROI that HAI elimination efforts can have on an organization. *Dispelling the Myths: The True Cost of Healthcare-Associated Infections*, a February 2007 white paper by the Association for Professionals in Infection Control and Epidemiology (APIC), presents a business case for HAI elimination in hospitals. (The white paper is available on the HFMA web site at [www.hfma.org/library/accounting/costcontrol/400546.htm](http://www.hfma.org/library/accounting/costcontrol/400546.htm).) Healthcare financial executives

## Setting ambitious goals and targeting zero HAIs can improve patient safety and reduce costs.

also can calculate the estimated value of HAI elimination efforts at their organizations by following the methodologies outlined in *Calculating the Value of HAI Elimination at Your Organization* on page 87.

*Make HAI elimination a clear leadership priority.* Healthcare financial executives play an essential role in driving systemwide change of any kind, and eliminating HAI is no different. Organizations, including the Institute for Healthcare Improvement (IHI), the Joint Commission, and the Association for Healthcare Research and Quality (AHRQ), agree that hospital boards, in particular, play an important role in ensuring that HAI prevention is one of their top, systemwide priorities. As Donald Berwick, MD, CEO of IHI, often points out, hospital boards need to view HAI elimination as a fiduciary

THE IMPACT OF CLABs\* ON GROSS MARGIN

	DRG 204/2721 (n=3) Acute Pancreatitis	DRG 191 (n=3) Pancreatitis w/cc†	DRG 483 (n=2) Pancreatitis w/ Tracheotomy	Case w/Pancreatitis with CLAB
Revenue (\$)	\$5,907	\$99,214	\$125,576	\$200,031
Expense	\$5,788	\$58,905	\$98,094	\$241,844
Gross margin	\$119	\$40,309	\$27,482	\$(41,813)
Costs attributable to HAI				\$170,565
Length of Stay	4 days	38 days	41 days	86 days

\*CLAB = central line-associated bloodstream infection.  
†cc = complication/comorbidity.

Source: Shannon, R.P., et al., "Economics of Central Line-Associated Bloodstream Infections," *American Journal of Medical Quality*, "Supplement to Vol. 21, No. 6, November/December 2006, pp. 7S-16S.

responsibility equivalent to their financial responsibility. According to Berwick, boards need to feel personally responsible when patients get infections that could have been prevented with proper system design. Once personal accountability occurs at the board and executive level, systemwide change (and savings) is possible.

*Provide your IP team with the resources they need to get the job done.* Progressive CFOs are looking at IP teams as a partner in profitability, not a cost center, because the teams can help avoid costly infections before they occur and free up hospital beds for new admissions. By working with their IP team and organizations such as APIC, CFOs can ensure that they have allocated the appropriate budgetary and staffing support to enable aggressive infection prevention. Unfortunately, many infection preventionists point to a lack of resources as a primary reason institutions have failed to reduce HAIs. According to APIC's 2008 MRSA Pace of Progress survey, 14 percent of 2,000 respondents cited lack of resources, 13 percent cited lack of time, and 16 percent cited lack of support from clinical and administrative leaders as barriers to introducing additional MRSA prevention programs. Only four in 10 respondents felt their facility was doing

enough to reduce infections. Yet interventions to prevent infections are typically inexpensive—pennies on the dollar compared with the cost of an HAI once it occurs.

## Healthcare financial executives play an essential role in driving systemwide change of any kind, and eliminating HAI is no different.

CFOs should look to their IP team to be experts in preventing the transmission of infectious disease. Infection preventionists can and should play a critical role in educating staff about HAI elimination. They should serve as trusted consultants to everyone from front-line caregivers to hospital executives, leading efforts to apply evidence-based best practices to fight infection, and leveraging data to drive performance improvement.

*Implement real-time infection surveillance systems and other IP technology.* To truly maximize the IP team's potential, healthcare financial executives are increasingly investing in automated

### Clinical Recommended Practices

Vigilant implementation of proven successful recommended practices is a key weapon in the quest for zero hospital-acquired infections. Allegheny General Hospital (AGH) requires all staff to adhere to the following recommended practices:

- > Proper hand hygiene must be performed prior to insertion or manipulation of any vascular catheter, even when gloves are used—either through soap and water or an alcohol-based hand sanitizer.
- > Sterile gown, gloves, large drapes, and nonsterile masks and caps must be worn during insertions of vascular catheters.
- > Two percent CHG antiseptic is required to be used prior to central line insertions.
- > Clinicians are encouraged to make every effort to use subclavian lines whenever possible, because femoral line insertions are 15 percent more likely to cause an infection. When femoral lines must be used, AGH requires its staff to remove the line within 12 hours.
- > Clinicians must follow a strict catheter site care regimen. They must use a chlorhexidine-impregnated patch to kill bacteria on the skin, keep the catheter site covered with sterile gauze or dressing until the insertion is completed, and keep dressing changes to a minimum. During dressing changes, skin must be disinfected with chlorhexidine, not antibacterial ointments, due to increased risk of infection and antimicrobial resistance.

surveillance technology. Instead of using resources to manually review lab reports, the IP team can use automated surveillance technology to ensure prompt access to real-time infection data that can be used to drive immediate improvements. Furthermore, proper use of the data can increase compliance with IP measures without requiring additional staff. For example, after AGH implemented a real-time infection surveillance system and shared data with front-line teams, the organization experienced significant improvements in staff adherence to best practices. Dressing application appliance improved by nearly 60 percent, and proper use of skin prep, maximal barrier precautions, and large sterile drapes improved by nearly 70 percent, 60 percent, and 40 percent, respectively. Of course, the technology is only a tool. Experienced infection preventionists are required to properly capture, interpret, and communicate the information.

*Create a culture of safety: Involve everyone in the solution.* IP needs to be a shared responsibility. It's critical to fully integrate infection prevention

across the entire healthcare institution, and to set the expectation that IP measures will be applied consistently by all healthcare workers, 100 percent of the time. That means elevating IP beyond a box-checking activity. It means weaving IP into every job description, into every performance appraisal, to make it clear that everyone in the healthcare system plays a role in prevention. It also means creating a culture of transparency and learning, where staff members are free to hold coworkers accountable for IP, and where mistakes and poor systems and processes can be openly discussed without fear of penalty. CFOs can help lead and reinforce this effort by ensuring that staff at all levels understand the significant financial toll that HAIs take on the hospital's bottom line.

*Identify and apply best practices.* Because of the opportunity for cost savings, CFOs should have a vested interest in ensuring that recommended practices in HAI elimination are being consistently implemented. They will find that the cost of implementing these practices is inexpensive compared with the costs of treating infections.

Often the simplest of tasks cause the greatest compliance challenges. For example, a 2004 study conducted by the *Annals of Internal Medicine* discovered that although the majority of healthcare workers claim they wash their hands regularly, only 28 percent actually washed their hands between patients—with clinicians in the operating room, anesthesia, and emergency departments having the lowest incidence of hand-washing compliance.

In 2004, AGH began standardizing recommended practices for simple procedures such as hand hygiene, maximal barrier precautions, and femoral line use. Then it held staff accountable for the consistent implementation of these practices. As a result, AGH's ICU and CCU experienced a 40 percent drop in CR-BSIs after the first year and a 60 percent drop in the incidence of infection after two years.

*Implement and fund mandatory IP training.* Despite AGH's success lowering CR-BSI rates in its ICUs,



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## Failure to fund continued IP training can often lead to increased rates of infection—and increased costs to treat those infections.

low levels of CR-BSI persisted. Process standardization had gone only so far. The AGH team had identified the recommended practices, redefined hospital policy to incorporate these practices, and set expectations of adherence. A search for the cause of persistent infection disclosed that some workers were unaware of the process standardization program. Others were unfamiliar with the program's specifics, and some had not mastered the necessary skills of appropriate central line insertion and care. AGH's leaders realized they had not articulated the message clearly enough, and had not provided adequate training to ensure that staff at all levels were aware of the recommended practices and able to perform them.

In short, AGH's leaders realized they had underestimated the importance of communication and training. So they invested in people and programs to ensure that staff at all levels of the organization were continually trained to properly implement infection control recommended practices. AGH now requires all residents, new hires, subspecialists, and nursing staff to complete annual training and testing in HAI prevention techniques. Repeated exposure to this kind of training is critical to behavior change. As a result of this aggressive training approach, AGH realized an additional 4.4 percent decrease in CR-BSI's over two years and a 97 percent reduction in the incidence of CR-BSI. Its recommended practices and training are available through an APIC Guide on Eliminating Cather-Related Complications. The key take away for financial

executives? Failure to fund continued IP training can often lead to increased rates of infection—and increased costs to treat those infections.

*Measure results and repeat the process.* Eliminating HAI is not simply a function of IP staff. It requires clear goals, leadership commitment, resources, a relentless commitment to best practices, effective people management, and continued vigilance. The battle for eliminating HAIs is not a destination; it's a journey. It's a continuous battle that healthcare leaders should fight, because the opportunity for return for both patients and the bottom line is considerable.

The goal of eliminating HAIs is indeed within reach. By partnering with IP and clinical staff to implement these approaches, hospital leaders can improve healthcare quality while reducing costs. By targeting zero HAIs, we can improve the quality of life for more than 2 million people, and save nearly 100,000 lives each year. We can also eliminate millions of dollars in unnecessary expense from the nation's healthcare system, and improve the bottom line of hospitals across the United States. The time to act is now. ●

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