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The High Costs of Hospital-Acquired Infections

Hospital-Acquired Infections (HAIs) generally appear between two and four days after a patient is admitted to a hospital or other health care facility. Many HAIs are preventable because they stem from correctable, recurring process breakdowns, such as staff using poor sterilization techniques or improperly cleaned equipment.

Although solutions are typically straightforward and inexpensive, the real challenge has always been identifying where and when these systematic patient care breakdowns occur early enough to avoid unnecessary morbidity, mortality, length of stay, and cost.

The New Jersey Infection Prevention Partnership

To address this issue, Horizon Blue Cross Blue Shield of New Jersey (BCBSNJ) forged a partnership with New Jersey hospitals and Cardinal Health MedMined Services to assist infection control practitioners (ICPs) in the process of making infection prevention a shared goal across the hospital.

The result of this collaboration, the New Jersey Infection Prevention Partnership (NJIPP), which released its pilot program in September 2005, provides ICPs a hospitalwide electronic surveillance capability that frees them from the task of chart review to determine patterns of laboratory results and clusters of patients with the same illness patterns.

William H. Finck, former director of network initiatives for Horizon BCBSNJ, spearheaded the effort after recognizing the need for hospitalwide, electronic surveillance capability.

There are currently 27 New Jersey hospitals participating in the NJIPP pilot program. In hospitals that have been in the program for at least one year, infection rates have been reduced by more than 15%, avoiding more than 200 deaths from infection and saving these hospitals in excess of \$28 million.

Finck attributes the success of the NJIPP to “Data mining surveillance technology, that’s the basis of the program. [This technology] does all the detection work—the pattern analysis that the infection control professional in a hospital would have to do manually. It does it on a hospitalwide basis—someone manually would be doing targeted surveillance and manual process chart review. Because all that is done electronically, it frees up the professional to focus on intervention, education, and prevention,” says Finck.

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Mountains of Data: The ICP's Challenge

The NJIPP's seeds lie in conversations Finck had with hospital executives about the cost of HAIs and opportunities to reduce the incidence rate.

"That's when I learned the methodology of chart review. Infection control in a hospital is usually small—it's one or two people, overwhelmed with data. The hard part is that they'll get piles of lab reports everyday. It would take them all this effort to find out what the possible source of infection was or know if infection was about to blossom," notes Finck.

At the same time, Finck learned of Cardinal Health MedMined Services and electronic surveillance related to the ICP. "It struck me that if the ICP had tools that could do the research for them, they would have more time to work with clinical staff on processes that would avoid infection and provide education on those processes."

The biggest challenge to getting the program up and running in 2005 was "initial skepticism about our intent," says Finck. "When we went out to talk to hospitals about adopting the technology, we had to convince them our intention was to lower the rate of infection, not to use data to reduce levels of reimbursement. We started with a low level and built faith. We agreed that all we would ever see was aggregated, not hospital-specific data."

Horizon BCBSNJ pays a significant portion of the cost of data mining surveillance technology software and consultative services in hospitals where it is used to identify, reduce, and prevent infections. When a hospital joins the NJIPP, Horizon BCBSNJ pays 90% of the cost of the program in Year 1. In

Year 2, Horizon pays 70%. In Year 3, Horizon pays 20%. The hospital can withdraw from the partnership after Year 1.

The actionable data provided to the ICP as a result of the electronic surveillance lead to the detection and correction of process breakdowns that lead to infection. The use of these data has led directly to an HAI reduction of more than 15% in partnership hospitals.

How It Works

Data on potentially infected patients are collected, organized, and delivered to the hospital ICP by Cardinal Health MedMined Services.

MedMined installs a server in the hospital attached to the admission, discharge, and transfer database so it can track a patient in the hospital. MedMined pulls information from the hospital laboratory and pharmacy systems to detect which patients have an HAI and marks them with a Nosocomial Infection Marker (NIM)[™], an electronic marker that uses sophisticated algorithms to analyze existing microbiology laboratory and patient census data to identify HAIs.

According to Patrick Hymel, M.D., MedMined's chief medical officer, "The NIM allows infection control professionals to efficiently keep watch over all patients and areas of the hospital, allowing them to prioritize and focus their infection-prevention efforts where and when they are most needed. Because the NIM is objective, consistent, and can be tied to financial data, ICPs are armed with surveillance data meaningful to both clinicians and hospital executives."

The data from MedMined's Data Mining Surveillance service are trans-

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ferred to the hospital ICP on a set schedule, allowing the ICP to see patterns immediately.

“It doesn’t take the ICP five to six months of research to detect the pattern,” says Finck. “They get a report on a monthly basis, by unit, by infection type. Now when the ICP goes out on the floor, they have actionable data that they can share with clinical staff that’s meaningful and relevant.”

MedMined also provides the hospital with a financial analysis of the cost of infection. They work with the hospital to get actual cost data and analyze by specific disease state the cost of a patient who has an NIM compared to patients without an NIM within the same disease state.

Results and Expansion

“What surprised us is the rate of decrease,” says Finck of the initial results. The NJIPP began with 11 hospitals and grew to 22 from the fourth quarter of 2005 through the second

quarter of 2008. They also began at a 6.6% average rate of infection and reduced it to 4.8% in 2008.

“Between October of 2005 and June 2008, we have prevented 4,698 infections,” adds Finck. “We saved 235 people who would not have left the hospital before [the NJIPP].”

The program is being expanded to 35 hospitals in 2009 with the intent to expand the program to all Horizon BCBSNJ in-network hospitals in 2010. **B**

Federal Government Forges Ahead with Comparative Effectiveness Research

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Developing Framework

After completing the draft definition and criteria for prioritization, the council developed a strategic framework to categorize current activity, identify gaps, and inform decisions on high-priority recommendations. This framework represents a comprehensive, coordinated approach to CER priorities that supports immediate decisions for investment as well as provides a foundation for longer-term strategic decisions.

The framework groups CER investments and activities into four major categories:

1. Research (comparing medicines for a specific condition or discharge process A to discharge process B for readmissions)
2. Human and Scientific Capital (training new researchers to conduct CER, developing CER methodology)
3. CER Data Infrastructure (developing a distributed practice-based data network, linked longitudinal administrative or electronic health record databases, or patient registries)

4. Translation and Adoption of CER (building tools and methods to translate CER into practice and measure results)

In addition, investments or activities related to a specific theme can cut across these categories. They are cross-cutting because they may include research, human and scientific capital, CER data infrastructure, and/or translation/adoption. These themes could include conditions (for example, cancer), patient populations (for example, the elderly, minorities, children, persons with disabilities) and/or type of intervention (for example, devices, behavioral change, delivery system). (See Figure 1 on page 10).

To that end, in March, Congress requested the Institutes of Medicine (IOM) to conduct a study to determine national priorities for CER. At press time, the IOM’s report was in review and was scheduled for publication in June. **B**

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