



Sentri7

*Turning Data into Action for  
Automated Proactive HAI  
Surveillance*

## National Focus on Infection Prevention and Healthcare-Associated Infections

Robust infection prevention continues to be a national healthcare priority with significant potential impact on patient outcomes, patient satisfaction and hospital financial stability. Without an electronic surveillance system that provides an automated, algorithmic approach to real-time identification of healthcare-associated infections (HAIs), the burgeoning demands of federal and state-based reporting mandates may become increasingly difficult to accomplish. Infection prevention programs that depend primarily on paper-based, manual, and retrospective surveillance processes and reports for aggregation with cross-checking of data to identify high-risk patients and emerging infections will struggle to keep hospitals on the right side of regulators and quality-based payment programs.

### Regulatory Requirements

Beginning in 2015, the Centers for Medicare and Medicaid Services (CMS) significantly increased reporting requirements across the healthcare continuum for all facilities that participate in the Quality Reporting Program.

- Acute care hospitals are required to report central-line associated bloodstream infections (CLABSI) and catheter-associated urinary tract infections (CAUTI) from all adult and pediatric medical, surgical, and medical/surgical wards, in addition to the ongoing reporting from intensive care units.
- Inpatient rehabilitation facilities now need to report methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia and *Clostridium difficile* infections confirmed by laboratory results (LabID) by location from all inpatient rehabilitation units within acute care hospitals or at the facility-wide inpatient level, if free-standing.
- Long-term acute care facilities must report MRSA bacteremia and *C. difficile* LabID events at the facility-wide inpatient level.
- Acute care hospitals, inpatient rehabilitation facilities, long-term care hospitals and ambulatory surgery centers were mandated by CMS to report healthcare worker influenza vaccination summary data beginning with the 2014-2015 influenza season.

CMS surveyors now employ an expanded 49-page survey to evaluate hospitals' compliance with infection prevention-related Conditions of Participation in scheduled or unannounced surveys.<sup>1</sup> To avoid citation, hospitals should have a designated, trained infection preventionist, top-level administrative support, ongoing staff education, and "infection control policies and procedures that are based on nationally recognized guidelines and applicable state and federal law." Hospitals must also have identified multidrug resistant organisms (MDROs) that are epidemiologically important and established policies and procedures to minimize their development and spread, as well as systems to identify patients at risk of infection or colonization with an MDRO.

It is likely that the regulatory and financial pressure to control HAIs will continue to build over the next few years. In addition to the programs already announced or implemented, the National Action Plan for Combating Antibiotic-Resistant Bacteria released in March 2015 calls for hospitals and other healthcare organizations to take steps to prevent the spread of resistant organisms immediately and for all hospitals to implement infection control and antimicrobial stewardship programs by 2020.<sup>2</sup> CMS is expected to make these programs a condition of participation for hospitals by 2017.<sup>3</sup>

### Reduced CMS Reimbursements

For fiscal year 2015, up to 5% of a hospital's Medicare reimbursement could be at risk for failure to reduce HAIs and readmissions, with 1% specifically tied to CAUTI and CLABSI rates. The Department of Health and Human Services plans to link 85% of all Medicare payments to quality or value measures by 2016 and 90% by 2018 and is encouraging private payers to adopt similar payment schemes.

All of these programs aim to improve patient care and stem the rise of increasingly resistant pathogens. Each year, 2 million hospitalized patients develop infections with multidrug resistant organisms, which keep them in the hospital for an additional 8 million days and result in 23,000 deaths.<sup>4</sup>

### Cost Control

These infections have serious financial repercussions for hospitals. Seventy percent of MDRO infections are acquired in hospitals and are non-reimbursable by Medicare and many other payers. The extended stays required to treat those infections are estimated to cost hospitals between \$20 billion and \$35 billion a year in medication, labor and other care costs, making their control a matter of significant economic importance for the industry and individual hospitals.<sup>5</sup>



*Hospitals that have implemented comprehensive infection prevention programs have seen rates of certain HAIs drop as much as 68%.<sup>7</sup>*

## The Advantages of an Infection Prevention Program Supported by Electronic Surveillance

The good news is that in many instances, the incidence of healthcare-associated infections has been reduced over the last decade. However, to excel in real-time prevention and early identification of HAIs and to implement immediate, effective isolation management, an electronic surveillance system is critical. Use of an electronic surveillance system, particularly one with embedded clinical decision support content, can help enable hospitals to:

**Quickly identify at-risk patients, which may reduce morbidity and save lives.** Real-time identification of HAIs and MDROs enable clinicians to be appropriately treat patients when the infection is in its early stages, which may result in better outcomes for the patient.

**Manage isolation precautions from admission or identification until discharge or resolution, which can reduce the spread and help protect other patients and staff.** MDROs can spread from an infected patient to dozens of others in waiting areas, hallways, common rooms or imaging suites. An infection prevention program that identifies and tracks patients with organisms of interest ensures proper precautions are taken. At the same time, knowing where a patient is and has been who develops a contagious infection can substantially simplify identification of other patients who may have been exposed.

**Maximize “hard-loss” savings.** Historically, infection prevention has been viewed as a non-revenue producing department that potentially contributes to soft cost savings. Proactive infection prevention efforts will be essential in maximizing hard loss savings or avoidance. Hospitals with HAI risk fines or reduce payments due to the implementation of value-based purchasing programs by CMS and other third-party payers. Many HAIs, including CLABSI, CAUTI and SSI, appear on Medicare’s no payment list for hospital-acquired

conditions, meaning infection prevention directly affects hospital revenues. Just one central-line associated bloodstream infection could increase a hospital’s treatment costs by \$16,550, according to the CDC.<sup>6</sup> In 2014, 721 hospitals experienced reductions in their Medicare reimbursements as a result of high rates of healthcare-associated infections. CMS also assessed fines against 2,610 hospitals for excess readmissions, which are frequently associated with HAIs.

**Protect against potential loss of market share related to HAIs.** The Affordable Care Act calls for public reporting of HAIs, with results of nearly every U.S. hospital visible on the Hospital Compare website. Consumer advocates and concerned patients can and do publicize hospital results meaning high rates can quickly become a public relations nightmare and lead to loss of patients and revenue. In this environment, an effective infection prevention program that helps enable a hospital to rapidly identify and reduce these infections is a competitive advantage.

**Stay on the right side of regulators.** Standardized infection ratios, which indicate the effectiveness of HAI prevention programs over time, require consistent and thorough documentation to ensure accuracy. The National Health Safety Network (NHSN) reporting requires aggregation and cross-checking of multiple data streams. For instance, the required data elements for CLABSI are unit census, central line days and positive blood cultures and monthly reporting plan, while for CAUTI, the required data include unit census, urinary catheter days, positive urine cultures and monthly reporting plan.

Reports that indicate infection rates by type and by organism and flag in real time those that may require NHSN reporting enable hospitals to target problem areas, improve patient care and meet regulatory requirements. Creating those reports while staying on top of emerging infections, however, often exceeds the resources of the team responsible for infection prevention in a hospital without an electronic surveillance system.

## Electronic Surveillance Provides Critical Support to Infection Prevention Programs

The drive toward zero tolerance of HAIs, increased regulatory interest and financial incentives associated with reducing infections has led many hospitals to adopt electronic surveillance systems to help improve the effectiveness and efficiency of their infection prevention programs. These systems aggregate data from admissions/discharge/transfer, electronic health records, pharmacy, laboratories, microbiology, radiology, surgery and other hospital systems. The systems then apply algorithms that help enable hospitals to rapidly identify patients at risk for HAIs, flag multidrug resistant organisms, detect emerging outbreaks and may dramatically reduce the time spent reporting on infections.

Electronic surveillance programs can also help capture the data needed for analysis and documentation, create the

necessary reports for regulatory compliance and offer graphical representation of trends for management. By providing easy to read dashboards and automated alerts, they also help provide helpful tools a hospital can use to aid in improving its infection rates.

Electronic surveillance systems based on an algorithmic methodology eliminate much of the burden of chart review by presenting the infection preventionist with a list of patients who require further investigation. As a result, these systems help hospitals to isolate and treat patients with MDROs or HAIs quickly and help reduce the time needed to determine which infections require reporting to NHSN. With less time devoted to chart review and data cross-checking, infection preventionists can devote more hours to educating staff and implementing interventions, which can help hospitals reach more of their quality goals and protect the bottom line.

*“In the past trying to look at charts between hospitalist, nursing, other physicians, dieticians, physical therapist, cardio-pulmonary and case management has been impossible. Sentri7® definitely helps us see charts, alerts and infections – rapidly.”*

*- Denise Pratz, Infection Preventionist,  
Lake Granbury Medical Center*



## Sentri7®

More than 610 hospitals use Sentri7® electronic surveillance system to monitor more than 1 million patients at any given moment. Sentri7 support uses data and clinical expertise to bear on infection prevention and control initiatives and helps hospitals quickly identify emerging outbreaks, at-risk patients, multi-drug resistant organisms and more.

**Sentri7 assist providers in quickly identifying identification of HAIs**, such as central-line associated blood stream infections, catheter-associated urinary tract infections, surgical site infections and ventilator-associated pneumonia. By using real-time data and alerts, the system may help providers improve patient care processes and patient outcomes and reduces infection-associated costs.

**Sentri7 flags patients who should potentially be isolated**, which may reduce the spread of infection in the hospital. It provides a tool for bed-tracing in potential clusters or outbreaks.

**Sentri7 also can help dramatically reduces the time required for HAI surveillance, data collection, aggregation, analysis, and reporting internally and externally to NHSN.**

**Sentri7 helps facilitate quality, safety and cost initiatives**, such as through the development of a rolling 12-month antibiogram specific to the facility and drug-bug mismatch notifications. Sentri7 assists hospitals with compliance concerns by helping to ensure their protocols and policies meet CMS Core Measures and Value-Based Purchasing requirements as well as The Joint Commission medication management guidelines.

***“Without the support of an integrated, rules-based database like Sentri7, healthcare organizations only have the resources and time to reach the lowhanging fruit in terms of quality initiatives. It’s all about efficiency; being able to complete your work and still be out on the floor—proactively addressing what might otherwise be missed.”***

***- Pam Vaccaro, RN, CIC, Director of Infection Prevention and Environmental Services, North Oaks Health System***

## Sentri7 Users Report:



## Sentri7 Users Report:



### Clinical decision support to enhance care and safety

The success of clinical initiatives depends on appropriate clinical decisions. For almost thirty years, Wolters Kluwer has helped hospitals and clinicians make informed decisions by providing industry-leading evidence-based guidance. Today, thousands of hospitals use Sentri7 clinical decision support guidance in their EMRs and through UpToDate® and Lexicomp® to support their quality and safety initiatives, reduce costs and standardize care delivery. Sentri7 builds on this content and real-time data from across the hospital to generate alerts and queries that help identify gaps in patient care—and delivers those notices to the clinician on desktop or mobile devices at the point of care.

“Sentri7 has made our surveillance efforts more efficient, easy and accurate. Having all of the real-time information integrated into a single web-based location is very helpful. It has eliminated the long, tedious efforts of manual infection prevention and freed us up to spend valuable time on the unit floor. We are now able to quickly find and confirm infections, identify trends, and initiate interventions to stem the spread of infection—even from home.”

- Adebisi Adeyeye, Infection Prevention Nurse, Montefiore

### Change management services to improve outcomes

The experienced Senti7 clinical team can also develop change management programs that assist hospitals implementing Senti7 to achieve optimal patient outcomes, financial performance and clinical team engagement. Senti7 helps hospitals identify opportunities for improvement relative to best practices and peer organizations, and develop policies and protocols that streamline workflows and reflect organization priorities. The clinical team also assists hospitals with staff development, clinical resources and customized clinical alerts. These change management programs enable health-care organizations to create reports that clearly demonstrate the clinical and cost outcomes of infection prevention programs and highlight areas for improvement.

### Documented cost savings and quality improvements

Healthcare organizations quickly realize the benefits of implementing Senti7 through improved quality of care and reduced costs.

- Hospitals using Senti7 report HAI rates decline between 15% and 25%.
- Every hour, Senti7 hospitals save \$246,862 in total costs as a result of pharmacy interventions alone. That's more than \$720 million each year.
- Every hour, Senti7 processes 35,000 rules and documents more than 4,000 interventions. On an annual basis, that translates to more than 12 million interventions that may be improving care.

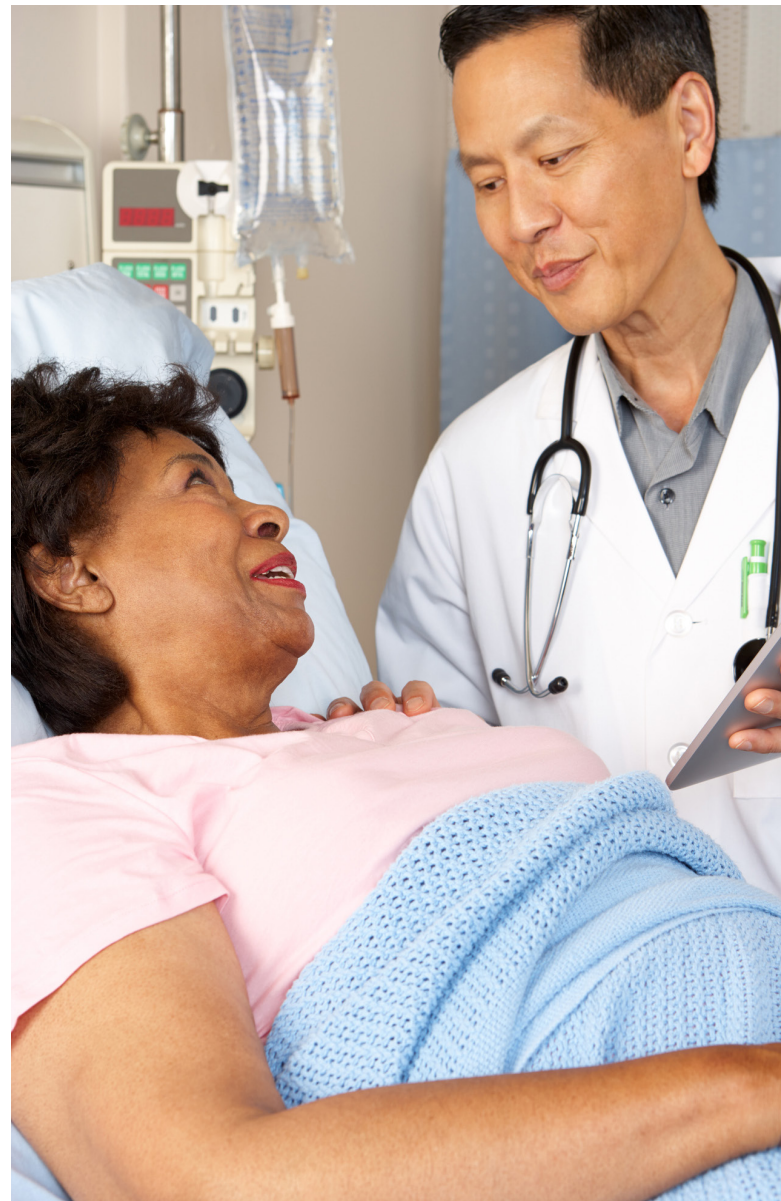
“We justified the expense of the software in the first three months of use in hard cost savings alone. When I can show these cost savings, plus the safety and quality benefits, Senti7 really sells itself.”

- Robert Begliomini, Administrator of Pharmacy Services, Lehigh Valley Health Network

To learn how Senti7 can help you improve clinical outcomes visit [www.senti7.com](http://www.senti7.com) or call 800.654.8395.

## Improve Your Outcomes

Regulatory and financial pressures continue to build, requiring hospitals to focus more on infection prevention and control to avoid negative survey findings, reimbursement penalties and reputational damage. At the same time, the awareness of the human cost of healthcare-associated infections and the threat posed by the growing prevalence of multidrug-resistant organisms has generated more interest in quality programs and patient care initiatives that address these concerns. For all of these reasons, hospitals are using electronic surveillance to support the increasingly important role of infection prevention teams and meet the burgeoning number of regulatory reporting requirements associated with infection prevention today.



## References

### REFERENCES

1. Centers for Medicare & Medicaid Services. Hospital Infection Control Worksheet. <http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Policy-and-Memos-to-States-and-Regions-Items/Survey-and-Cert-Letter-15-12.html>
2. The White House. National Action Plan for Combating Antibiotic-Resistant Bacteria. March 2015.
3. McKinney M. Hospitals focus on antibiotic overuse as CMS prepares new mandate. December 20, 2014.
4. Centers for Disease Control and Prevention. Antibiotic resistance threats in the United States, 2013.
5. Fishman N. Antimicrobial Stewardship 2014: National and regional trends. University of Pennsylvania Perelman School of Medicine. September 30, 2014.
6. Vital Signs: Central Line-Associated Blood Stream Infections. United States, 2001, 2008, and 2009. Morbidity and Mortality Weekly Report. CDC. March 4, 2011/60(08);243-248.
7. Preventing Healthcare-Associated Infections. CDC At Work.

### **Contact Information:**

Wolters Kluwer  
3535 Factoria Blvd SE  
Suite 440  
Bellevue, WA  
98006  
800.654.8395

Please visit [www.wolterskluwer.com](http://www.wolterskluwer.com)  
for more information