



# Case Study

High-Performing Health Care Organization • December 2011

## Englewood Hospital and Medical Center: Seven Consecutive Quarters Without a Central Line–Associated Bloodstream Infection

JENNIFER N. EDWARDS AND SHARON SILOW-CARROLL  
HEALTH MANAGEMENT ASSOCIATES

### **Vital Signs**

*Hospital:* Englewood Hospital and Medical Center

*Location:* Englewood, New Jersey

*Type:* A 540-bed, private, nonprofit teaching hospital with three intensive care units: a cardiovascular intensive care unit, a medical–surgical intensive care unit, and a progressive care unit.

*Distinction:* Zero central line–associated bloodstream infections (CLABSIs) in its three intensive care units.

*Timeframe:* January through December 2009. See [Appendix](#) for full methodology.

This case study describes the strategies and factors that appear to contribute to the low incidence of CLABSIs at Englewood Hospital and Medical Center. It is based on information obtained from interviews with key hospital personnel, publicly available information, and materials provided by the hospital from December 2009 to January 2010.



In the late 1990s, Englewood Hospital and Medical Center (Englewood) embarked on a program to improve the continuity and coordination of care for its most complex patients by adopting a delivery model that relies on physicians trained and board certified in critical care medicine. These intensivists provide 24-hour coverage in the hospital’s intensive care units (ICUs) in partnership with patients’ community-based physicians and a team of highly trained ICU staff. As part of the intensivists’ efforts to improve care, they examined data on the hospital’s rate of central line–associated bloodstream infections (CLABSIs), and compared its infection rates and prevention practices with approaches described in the medical literature. They reviewed guidelines from the Association for Professionals in Infection Control and Epidemiology, the Institute for Healthcare Improvement (IHI), and the Centers for Disease Control and Prevention (CDC).

The mission of The Commonwealth Fund is to promote a high performance health care system. The Fund carries out this mandate by supporting independent research on health care issues and making grants to improve health care practice and policy. Support for this research was provided by The Commonwealth Fund. The views presented here are those of the authors and not necessarily those of The Commonwealth Fund or its directors, officers, or staff.

For more information about this study, please contact:

Jennifer N. Edwards, Dr.P.H.  
Health Management Associates  
[jedwards@healthmanagement.com](mailto:jedwards@healthmanagement.com)

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From that review, the group recommended adherence to an evidence-based CLABSI prevention protocol that included the use of a checklist to promote compliance.

To ensure the protocol was followed, the hospital trained and empowered nurses to enforce standards during the placement process and restricted the number and type of hospital personnel permitted to insert lines. In the cardiovascular ICU, for instance, only intensivists can insert central venous catheters. In other ICUs, a third-year postgraduate trainee or fellow can insert the catheter when supervised by an intensivist. Both residents and fellows are allowed no more than two attempts before the intensivist takes over the catheter placement. ICU staff are also required to replace all central lines that were inserted outside of the ICU or in another facility.

Many layers of process and data review reinforce the goals and help clinicians ensure quality standards are achieved. To identify additional areas for improvement, an ICU team conducts a defects analysis on every hospital-acquired infection. The hospital's infection preventionist also investigates each infection. The critical care nursing council, which includes an advanced practice nurse, patient care directors, and staff nurses, meets monthly to discuss outcomes. If the group identifies deviations in protocol, it may modify prevention practices to achieve desired outcomes. Action plans are shared with the hospital's nursing leadership and the critical care committee, which includes the intensivists.

The hospital's quality department shares data with the board on a wide range of quality indicators, including a report on rates of hospital-acquired conditions. The board reviews whether interventions to improve quality appear to be effective and identifies opportunities for improvement. This information is also shared with staff using an ICU dashboard, which is posted in the units, regularly reviewed by staff, and included in the hospital's newsletter. Infections of all types are also included on the hospital management's quality dashboard.

An electronic health record (EHR) system in the ICUs provides data on infection rates; since other units did not have an electronic health record system until

### WhyNotTheBest.org CLABSI Series

Between 4 percent and 5 percent of hospitalizations result in a health care–associated infection (HAI), at tremendous cost to individuals who become infected and those who fund health care. One of the most common and preventable HAIs is the central line–associated bloodstream infection (CLABSI), which can result when a central venous catheter is not inserted cleanly or maintained properly. An estimated 43,000 CLABSIs occurred in hospitals in 2009 and nearly one of five infected patients died as a result. This case study is part of a series that describes practices used by four leading hospitals that eliminated CLABSIs in their ICUs. The profiled hospitals are extending these strategies to other hospital units and to other HAIs. A synthesis report summarizing lessons from these high-performing institutions is available at <http://www.commonwealthfund.org/Publications/Case-Studies/2011/Dec/CLABSI-synthesis.aspx>. Comparative performance data on CLABSIs and other measures of health care quality, safety, outcomes, and patient experience for these four hospitals is available at <http://www.whynotthebest.org/reports/view/null/4214>.

the fourth quarter of 2011, they have been unable to detect the total number of catheter days (needed for calculating infection rates). EHRs have other advantages for tracking infection, as well, allowing for faster and more accurate identification, tracking, and benchmarking of infection rates and adherence to protocols.

Public reporting of infection data is the norm for New Jersey hospitals, and Englewood is a participant in two systems. In 2008, Englewood began submitting data to the CDC's National Healthcare Safety Network, a voluntary Web-based surveillance system. Infection data are also reported to the New Jersey Department of Health. Patients appear to be cognizant of this information, further motivating staff to reduce infections.

**RESULTS**

Englewood successfully eliminated CLABSIs in its ICUs for seven consecutive quarters, and then experienced one CLABSI in late 2010 just prior to interviews for this case study (Exhibit 1). The infection that broke the streak (in third quarter 2010) was a very complicated case involving a patient with multiple comorbidities, including mental illness, which made it difficult to keep the catheter site sterile. Even so, the extremely low CLABSI rate ranks them in the top 1 percent of all U.S. hospitals.

Approximately 75 to 100 central venous catheters are inserted monthly in Englewood’s three ICUs.

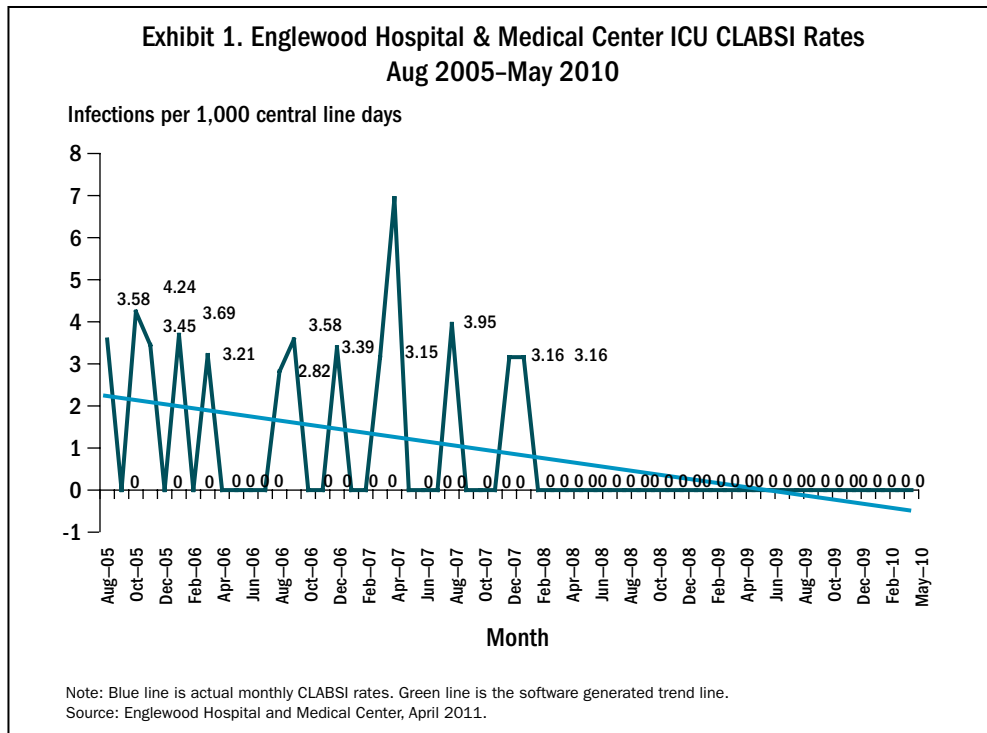
**SPREAD WITHIN THE HOSPITAL**

Englewood has attempted to extend its CLABSI prevention program to non-ICU floors, but has found the size and diversity of the clinical staff caring for patients on those units makes it more difficult to achieve strict adherence to protocols. As a result, rates of CLABSIs on these units have exceeded zero. To draw attention to the problem, hospital staff are kept informed of progress and goals related to infections through updates and periodic stories in the hospital’s newsletter.

**WORK ON OTHER HEALTH CARE-ASSOCIATED INFECTIONS**

Around 2008, the hospital incorporated CDC guidelines into its protocol to prevent catheter-associated urinary tract infections (CAUTIs) and focused staff attention on the suitability and duration of catheter use. As a result of the program, staff now document the reason for the continued use of the catheter. In addition, the hospital implemented the use of silver-impregnated catheters. These two changes contributed to an estimated 70 percent decline in CAUTIs between 2008 and 2011. To further reduce rates, the hospital joined a collaborative IHI improvement program in 2011 and is considering using a default order that requires the catheter to be removed one or two days after surgery, with exceptions allowed for physicians who need to monitor urine output.

To address ventilator-associated pneumonia (VAP) in the ICU, the team adopted the IHI’s ventilator bundle of interventions as the standard of care. While rates have improved, VAP has not been eliminated. After a spike in infections in one quarter, the ICU team worked with the infection control staff to identify contributing factors but found no common causes. Nonetheless, the rate fell back to zero with



increased attention. ICU-based VAP cases are also down, from 29 in 2003 to three in 2010.

## **LESSONS**

Englewood's success in eliminating CLABSIs over seven consecutive quarters stems from its decade-long commitment to prioritizing health care quality and safety. Other contributing factors include:

- strict adherence to national protocols for CLABSI prevention, including the use of a checklist to guide each insertion;
- leadership, education, and oversight by the ICU physicians and an advanced practice nurse who function effectively as a team;

- training and empowerment of ICU nurses to enforce standards during the placement process and maintain lines in strict adherence to safety procedures on an ongoing basis;
- monitoring, feedback, and display of performance data within the ICUs, using a quality and safety dashboard;
- teamwork between the ICU clinicians and the infection control department; and
- support of hospital leadership.

## **FOR FURTHER INFORMATION**

For further information, contact Kathy Kaminsky, M.S., R.N., vice president, clinical effectiveness, [kathy.kaminsky@ehmc.com](mailto:kathy.kaminsky@ehmc.com).

## Appendix. Purpose and Methodology for CLABSI Case Study Series

To better understand how some hospitals have succeeded in eliminating CLABSI in their ICUs, The Commonwealth Fund supported Health Management Associates in conducting an analysis of high-performing hospitals. The authors examined:

- how CLABSI prevention techniques were implemented and sustained;
- whether and how CLABSI prevention practices were extended beyond the ICU to other units and hospital floors;
- whether the infection prevention framework was extended to other health care—associated infections;
- what challenges hospitals faced in implementing and/or extending infection control interventions; and
- what organizational and cultural factors supported the successful adoption and continuation of best infection control practices.

To select the hospitals for study, the authors reviewed data made available to The Commonwealth Fund by a special arrangement with *Consumer Reports Health*, which integrated data from 15 states that require hospitals to report CLABSIs, and the Leapfrog Group, which collects infection data voluntarily reported by hospitals in 45 states. In all, the authors examined data from some 964 hospitals. These hospital-specific data are available on The Commonwealth Fund's [WhyNotTheBest.org](http://WhyNotTheBest.org) Web site.

The authors selected four hospitals from approximately 100 with zero CLABSIs and a standardized infection ratio of zero in calendar year 2009. The standardized infection ratio (SIR) represents total reported infections divided by total predicted infections. For CLABSI data, a SIR of 1.0 indicates that a hospital is performing just as would be predicted from national rates. A SIR greater than 1.0 indicates the hospital had more infections than predicted from national rates, and a SIR of less than 1.0 indicates it had fewer infections than predicted. Individual hospitals tend to report CLABSI rates (i.e., number of infections per 1,000 central line days), rather than SIRs.

The final selection was based on preferences for: hospitals with the highest number of central line days (indicating more opportunities for infections); those that are not well below average in mortality or readmission rates; and those with scores around the national average or better on measures of patient experiences and adherence to recommended care processes for pneumonia, heart attack, heart failure, and surgery as reported on [WhyNotTheBest.org](http://WhyNotTheBest.org). The selected hospitals also reflect a diversity of facilities, in terms of size and type of operating environment.

The authors gathered information through semistructured interviews (by telephone and through site visits) with key hospital leaders and staff knowledgeable about the hospital's infection control methods and history, and through reviews of hospital data, reports, and other materials made available by the hospital or obtained through Internet searches.

This methodology has some limitations. First, it is based on self-reporting, with a mix of unaudited and audited data. There is variation in self-reported CLABSI data, which means the findings may overreport success. Second, other unmeasured factors may affect CLABSI rates. Third, the sample is small and it is inadvisable to generalize to all hospitals based on such a small sample, or assume that hospitals in different circumstances have the capacity to adopt similar strategies. However, by [synthesizing findings](#) across the four hospitals and identifying common themes, challenges, innovations, and lessons, the authors offer other hospitals insights and options for reducing health care—associated infections.

### ABOUT THE AUTHORS

Jennifer N. Edwards, Dr.P.H., M.H.S., is a managing principal with Health Management Associates' New York City office. She has worked for 20 years as a researcher and policy analyst at the state and national levels to design, evaluate, and improve health care coverage programs for vulnerable populations. She worked for four years as senior program officer at The Commonwealth Fund, directing the State Innovations program and the Health in New York City program. Dr. Edwards has also worked in quality and patient safety at Memorial Sloan-Kettering Cancer Center, where she was instrumental in launching the hospital's patient safety program. She earned a doctor of public health degree at the University of Michigan and a master of health science degree at Johns Hopkins University.

Sharon Silow-Carroll, M.B.A., M.S.W., is a managing principal at Health Management Associates. She has more than 20 years of experience conducting research and analysis of local, state, and national health system reforms; strategies by hospitals to improve quality and patient-centered care; public-private partnerships to improve the performance of the health care system; and efforts to meet the needs of underserved populations. Prior to joining Health Management Associates, she was senior vice president at the Economic and Social Research Institute, where she directed and conducted policy analysis and authored reports and articles on a range of health care issues. Ms. Silow-Carroll earned a master of business administration degree at the Wharton School and a master of social work degree at the University of Pennsylvania.

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The aim of Commonwealth Fund–sponsored case studies of this type is to identify institutions that have achieved results indicating high performance in a particular area of interest, have undertaken innovations designed to reach higher performance, or exemplify attributes that can foster high performance. The studies are intended to enable other institutions to draw lessons from the studied institutions' experience that will be helpful in their own efforts to become high performers. It is important to note, however, that even the best-performing organizations may fall short in some areas; doing well in one dimension of quality does not necessarily mean that the same level of quality will be achieved in other dimensions. Similarly, performance may vary from one year to the next. Thus, it is critical to adopt systematic approaches for improving quality and preventing harm to patients and staff.

