

COMMENTARY

Maintaining the Momentum of Change: The Role of the 2014 Updates to the Compendium in Preventing Healthcare-Associated Infections

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Preventing healthcare-associated infections (HAIs) is a national priority. Although substantial progress has been achieved, considerable deficiencies remain in our ability to efficiently and effectively translate existing knowledge about HAI prevention into reliable, sustainable, widespread practice. "A Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals: 2014 Updates" is the product of a highly collaborative endeavor designed to support hospitals' efforts to implement and sustain HAI prevention strategies.

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BACKGROUND

Healthcare-associated infection (HAI) prevention is the quintessential patient safety issue. HAIs are the fifth leading cause of death in acute care hospitals. Up to 15% of patients develop an infection while hospitalized. In the United States, this accounts for approximately 1.7 million HAIs and 99,000 deaths annually.¹ A recent report estimated US healthcare system costs attributable to the five most common HAIs (central line-associated bloodstream infections [CLABSI], catheter-associated urinary tract infections [CAUTI], ventilator-associated pneumonia [VAP], surgical site infection [SSI], and *Clostridium difficile* infection [CDI]) to be \$9.8 billion, even without considering the sizable societal costs.² While there has been dramatic progress in controlling four of the five most common HAIs, the emergence of multidrug-resistant organisms (MDROs) has reached critical levels. The recent Centers for Disease Control and Prevention (CDC) report "Antibiotic Resistance Threats in the United States, 2013"³ indicated that each year in the United States, at least 2 million people acquire serious infections from organisms resistant to one or more antimicrobial agents, resulting in 23,000 deaths per year. The report advocates preventing these multidrug-resistant infections through immunization, appropriate use of antimicrobial agents, and adherence to infection prevention practices, including hand hygiene.

In the last several years, major changes in US healthcare have impacted HAI prevention. These developments include

improved interdepartmental coordination of federal efforts aimed at HAI prevention,⁴ posting of hospital-specific HAI rates on public websites to promote transparency,⁵ and linking of hospital-specific HAI performance to financial reimbursement as a strategy to motivate hospitals' HAI prevention efforts.⁶ As a consequence of the Deficit Reduction Act of 2005 and the Affordable Care Act of 2010, hospitals participating in the Centers for Medicare and Medicaid Services (CMS) Inpatient Prospective Payment System (IPPS) have been required since 2011 to report CLABSIs among patients in intensive care units (ICUs) to the CDC's National Healthcare Safety Network (NHSN) in order to qualify for annual payment updates. Since 2012, hospital-specific CLABSI rates have been publicly accessible.⁵ Additional data reported through NHSN to CMS already are, or soon will be, accessible, including SSI rates following abdominal hysterectomy and colon surgery, CAUTI, methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections, CDI, and receipt of influenza vaccination by healthcare personnel. Along with other quality metrics, these HAI data will be used to determine hospital-specific CMS reimbursement levels as part of value-based purchasing, thereby shifting some of the costs associated with HAIs from CMS to hospitals. Despite this increased focus on HAI prevention, a recent national survey of infection preventionists indicated that only 13% reported receiving more hospital support following implementation of CMS IPPS reporting requirements, and about one-third re-

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ported that the emphasis on reportable HAIs led to less time available for prevention of other nontargeted HAIs.⁷

PROVIDING GUIDANCE TO PREVENT HAI

Many comprehensive guidelines exist that provide evidence-based recommendations focused on HAI and MDRO prevention, including guidelines from the CDC, the Healthcare Infection Control Practices Advisory Committee (HICPAC), and professional societies.⁸⁻¹⁵ The majority of these guidelines utilize the Grading of Recommendations, Assessment, Development, Evaluation (GRADE) system to evaluate the strength of the supporting evidence.^{16,17} Using GRADE criteria, observational studies and expert consensus generally are classified as weak or very weak evidence. Although such rigorous assessment of scientific evidence using standardized criteria is critically important, this process often results in a lack of guidance around common and important HAI prevention issues. Unlike guidelines, expert guidance documents such as the articles contained within “A Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals: 2014 Updates” not only highlight HAI prevention strategies that have a strong evidence base but also provide guidance around less rigorously supported HAI prevention practices for which experts agree that the potential benefits outweigh potential risks. Many of these expert consensus-based recommendations would be categorized as supported by low or very low quality evidence leading to weak or no recommendations using strict GRADE criteria. Expert guidance documents can also provide a venue for discussing strategies to aid in implementing recommended practices and can be complementary to more traditional guidelines.

The 2014 updates to the Compendium are the products of a highly collaborative effort involving a diverse group of organizations with broad expertise in infection prevention and quality improvement. These documents integrate recommendations made by many groups into one resource that can be used by providers, administrators, and regulators to help direct and prioritize improvement efforts.

TRANSLATING EVIDENCE INTO PRACTICE

Evidence-based recommendations provided through guidelines or guidance documents form the foundation for HAI prevention efforts. Equally important are efforts to guide hospitals toward strategies that can be used to translate these recommendations into widespread, reliable practice. Successful efforts to deliver recommended practices require attention to both technical and adaptive work. The science behind these efforts has dramatically expanded and has facilitated ongoing and sustainable performance improvement. Technical work addresses issues for which knowledge is available to implement a solution. Summarizing evidence for the prevention of HAIs and developing policies, protocols, bun-

dles, or checklists to help ensure that patients receive the recommended practices are examples of technical work.

The use of prevention bundles has been shown to reduce HAI rates. A bundle is best defined as a grouping of evidenced-based practices that individually improve care. Bundling care processes facilitates implementation by providing a clear, tangible set of expectations to follow. A number of studies have demonstrated the impact of catheter insertion and maintenance bundles on CLABSI rates and have shown that CLABSI prevention bundles are effective, sustainable, and cost-effective for both adults and children.¹⁸⁻²⁰ Bundles have also been used in successful multifaceted efforts to reduce VAP,^{21,22} CAUTI,²³ and SSI.^{24,25}

Adaptive work requires changing peoples' values, attitudes, beliefs, and behaviors to foster a culture of safety, improve clinician engagement, and improve multidisciplinary teamwork.²⁶ Often, improvement projects focus the majority of effort on the technical work, yet projects more often fail from adaptive challenges, such as clinicians who do not support the project, clinicians who are reluctant to change their practice, or lack of leadership support.²⁷

Translating knowledge into practice requires an integrated approach to address both technical and adaptive work, including a deep understanding of the healthcare delivery system and human behavior, fostering engagement and ownership of the improvement process by local interdisciplinary teams, creating centralized support for the technical work, encouraging local adaptation of the intervention bundle, and ensuring a collaborative culture within the local unit and larger healthcare system.^{28,29} A variety of strategies is available to guide organizational change efforts. Common attributes among successful strategies include attention to “Four Es”: Engagement to motivate key stakeholders to take ownership and support the proposed interventions, Education to ensure that key stakeholders understand why the proposed interventions are important, Execution to embed the intervention into standardized care processes, and Evaluation to understand whether the intervention is successful. Improvement teams should ensure they have a plan to address each of the Four Es, targeting key stakeholders, including senior hospital leaders, improvement team leaders, and frontline staff in the implementation process. Implementation of multifaceted interventions addressing the Four Es, coupled with explicit efforts to improve teamwork and safety culture,³⁰ has been associated with sustained reductions in HAIs,^{21,31} mortality,³² and significant cost savings for hospitals.³³

In order to assist hospitals in translating the HAI recommendations into practice, each document within the updated Compendium now includes an implementation section that offers examples of published implementation strategies using the Four Es framework and provides references that hospitals can access for more detailed information about successful implementation strategies. We believe that these implementation sections fill an important void in most clinical practice

guidelines and that broad use of these strategies may expedite the delivery of recommended practices to the bedside.

FUTURE DIRECTIONS

A substantial proportion of HAIs are preventable.^{34,35} The improvements resulting from use of evidence-based interventions have been impressive, but significant deficiencies remain in our ability to efficiently and effectively translate existing knowledge into reliable, sustainable, widespread practice. Research funding is urgently needed to expand our ability to minimize infection risk across the spectrum of healthcare. In addition, resources must be provided to support and maintain the infrastructure needed for widespread implementation of these practices, including adequate hospital infection prevention and control staffing levels and funding to support state and federal public health coordination and leadership. Market forces and financial incentives must be aligned to motivate and enable healthcare facilities to invest in evidence-based infection prevention efforts, even when these efforts require a commitment of economic resources. In parallel, regulatory efforts should be similarly shaped by scientifically supported HAI prevention strategies. Because rigorous, consistent, and unbiased HAI surveillance forms the foundation for HAI prevention, efforts should be made to reward rather than financially penalize hospitals that invest in robust and validated HAI surveillance programs, despite the fact that improved surveillance can paradoxically result in apparent increases in infection rates that otherwise are erroneously attributed to poor performance.³⁶

Implementing the infection prevention recommendations described in the 2014 updates to the Compendium will lead to improvements in hospitals' infection rates, will lower healthcare costs, and, most important, will enhance the quality of healthcare for our patients. We must maintain and extend the gains made in reducing risks of device-related HAIs, begin to control spiraling rates of MDROs, and improve adherence to those HAI prevention measures proven to be effective. Success requires the ongoing support, involvement, and shared accountability of hospital leadership, healthcare providers, payers, legislative leaders, and other members of the healthcare community who together are privileged with the responsibility for providing patients with safe, high-quality, high-value health care.

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