The Power of Policy Change, Federal Collaboration, and State Coordination in Healthcare-Associated Infection Prevention

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Policymakers have prioritized the prevention of healthcare-associated infections (HAIs) as a double-win that can both improve health outcomes and reduce healthcare costs. In the past few years, state and federal policymakers have developed policies to improve coordination and promote transparency and prevention. At the federal level, congressional oversight, policy directives, and targeted funding have helped focus national HAI prevention efforts through the Department of Health and Human Services Action Plan to Prevent Healthcare-Associated Infections. The development of this action plan and the collaboration of its implementing agencies—the Centers for Disease Control and Prevention, the Centers for Medicare and Medicaid Services, and the Agency for Healthcare Research and Quality—have heightened nationwide awareness of HAIs and their preventability, and provided an infrastructure and tools to reduce HAIs. State policymakers have also acted to promote local transparency and tailor prevention efforts to local needs. The collaboration and action generated by these state and federal efforts have helped accelerate HAI prevention across the United States.

Healthcare-associated infections (HAIs) are a recognized problem, associated with high morbidity and mortality and excess healthcare costs. For several decades, HAI prevention has been a priority for healthcare epidemiologists, infection preventionists, and the Centers for Disease Control and Prevention (CDC). During the past 10 years the public awareness of HAIs has expanded dramatically, leading to increased scrutiny by consumers and policymakers. Successes in the prevention of central line–associated bloodstream infections (CLABSSIs) have changed the paradigm of HAI prevention, leading to a “new normal” that each infection is potentially preventable [1–3] and prompting interest at the state and federal levels in promoting transparency and prevention of HAIs.

DEVELOPMENT OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES ACTION PLAN TO PREVENT HAIS

In March 2008, the US Government Accountability Office (GAO) released the findings of a report requested by Representative Henry Waxman about the burden of HAIs in hospitals and the federal government’s effectiveness in responding to HAIs. The GAO concluded that there was a fundamental lack of coordination among agencies in the US Department of Health and Human Services (HHS) to monitor and prevent HAIs in hospitals. They indicated that HHS leadership was needed to prioritize prevention practices and improve the accuracy, transparency, and consistency of infection data [4].
In response to the report and increasing congressional interest in HAIs, the HHS Office of the Assistant Secretary for Health led an effort to develop a national action plan to prevent HAIs. In 2008, HHS established a senior-level steering committee charged with improving coordination and efficiency of prevention efforts across HHS agencies, including CDC, the Center for Medicare and Medicaid Services (CMS), and the Agency for Healthcare Research and Quality (AHRQ). The steering committee, scientists and program officials across HHS, and the chair of the Healthcare Infection Control Practices Advisory Committee (HICPAC) developed the HHS Action Plan to Prevent Healthcare-Associated Infections, providing a roadmap for HAI prevention in healthcare settings. Phase 1 of the action plan focused on acute care hospitals, where scientific information on HAI prevention and improvement metrics was most complete, and where HAI-associated morbidity and mortality were greatest [5]. Subsequent phases of the action plan extend to outpatient settings (including end-stage renal disease [ESRD] facilities, ambulatory surgical centers, and long-term care facilities) and address influenza vaccination of healthcare personnel [6].

The action plan summarizes federal activities in 5 chapters: Prevention and Implementation; Information Systems and Technology; Research, Incentives, and Oversight; Outreach; and Messaging. The main contribution of the plan has been the development of national 5-year prevention goals, with phase 1 providing specific measures to track national progress in reducing the 5 most prevalent infections in acute care hospitals (Table 1). Partners and experts in the field were formally engaged for input on proposed national targets, metrics, and metric systems. The preliminary draft action plan also sought and incorporated public and expert input. The plan for acute care hospitals was released in June 2009. Phase 2, addressing HAIs in ambulatory surgical centers and ESRD facilities and increasing seasonal influenza vaccination coverage of healthcare personnel, was released in fall of 2010. In April 2012, an updated action plan was released that includes revisions to phase 1 and a third phase addressing HAIs in long-term care facilities [17].

IMPACT OF THE HHS ACTION PLAN TO PREVENT HAIS

Federal Level
With the HHS action plan outlining national benchmarks and agency and state responsibilities for HAI prevention, Congress acted again to spur HAI prevention. Representative David Obey, Chairman of the House Appropriations Committee and an HAI prevention advocate, challenged states to develop their own HAI action plans with goals and activities that corresponded to the national action plan. The 2009 Omnibus Appropriations Act required that states receiving preventive health services block grant funds from CDC submit an HAI prevention plan to HHS no later than 1 January 2010. Although the block grant did not fund state HAI activities, it did raise awareness of the importance of HAI prevention in state health departments. States were asked to address 4 areas in their action plans: program infrastructure; surveillance, detection, reporting, and response; prevention; and evaluation, oversight, and communication and were encouraged to engage local stakeholders in plan development. In 2009, as part of the American Reinvestment and Recovery Act (ARRA), Congress directed $50 million in funding for state-level HAI prevention activities: $40 million was designated for CDC to support states and $10 million for CMS to enhance state oversight and certification activities of ambulatory surgical centers [7].

More recently, performance standards for HAIs have been linked to federal payment policies through the value-based purchasing program of the Affordable Care Act (ACA). The ACA states that HAIs are to be “measured by the prevention metrics and targets established in the ‘HHS Action Plan to Prevent HAIs’ or any successor plan” and instructs HHS to “establish a hospital value-based purchasing program … [u]nder which value-based incentive payments are made in a fiscal year to hospitals that meet the performance standards.”

<table>
<thead>
<tr>
<th>Metric</th>
<th>Source</th>
<th>National 5-Year Prevention Target</th>
<th>Federal Agency Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central line–associated bloodstream infections</td>
<td>NHSN</td>
<td>50% reduction</td>
<td>CDC</td>
</tr>
<tr>
<td>Adherence to central line insertion practices</td>
<td>NHSN</td>
<td>100% adherence</td>
<td>CDC</td>
</tr>
<tr>
<td>Catheter-associated urinary tract infections</td>
<td>NHSN</td>
<td>25% reduction</td>
<td>CDC</td>
</tr>
<tr>
<td>Surgical site infections</td>
<td>NHSN</td>
<td>25% reduction</td>
<td>CDC</td>
</tr>
<tr>
<td>Surgical care improvement project measures</td>
<td>SCIP</td>
<td>95% adherence</td>
<td>CMS</td>
</tr>
<tr>
<td>Clostridium difficile infections</td>
<td>NHSN</td>
<td>30% reduction</td>
<td>CDC</td>
</tr>
<tr>
<td>C. difficile hospitalizations</td>
<td>HCUP</td>
<td>30% reduction</td>
<td>AHRQ</td>
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<tr>
<td>MRSA invasive infections (populations)</td>
<td>EIP</td>
<td>50% reduction</td>
<td>CDC</td>
</tr>
<tr>
<td>MRSA bacteremia (hospitals)</td>
<td>NHSN</td>
<td>25% reduction</td>
<td>CDC</td>
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Abbreviations: AHRQ, Agency for Healthcare Research and Quality; CDC, Centers for Disease Control and Prevention; CMS, Centers for Medicare and Medicaid Services; EIP, Emerging Infections Program; HCUP, Healthcare Cost and Utilization Project; MRSA, meticillin-resistant Staphylococcus aureus; NHSN, National Healthcare Safety Network; SCIP, Surgical Care Improvement Project.
Value-based purchasing measures must first be reported under the inpatient prospective payment system (IPPS) of CMS (pay-for-reporting) before they can be used to impact payment (pay-for-performance). Starting in January 2011, hospitals participating in CMS’ IPPS were required to report CLABSIs among patients in intensive care units (ICUs) to the National Healthcare Safety Network (NHSN) in order to qualify for the annual payment update. CLABSI data reported via NHSN to CMS will be displayed on the HHS Hospital Compare Web site starting in 2012. Additional HAIs reported through NHSN as part of CMS’ IPPS are to be added as follows: surgical site infections (following abdominal hysterectomy and colectomy) and catheter-associated urinary tract infections in 2012; and methicillin-resistant Staphylococcus aureus (MRSA) bacteremia, Clostridium difficile infection (CDI), and healthcare personnel flu vaccination in 2013. In future years, the measures will be combined with other CMS value-based purchasing measures, and a hospital’s relative success or failure on these measures will directly impact their CMS reimbursement rate. Similar CMS quality initiatives are reaching outpatient settings as well. Dialysis facilities are required to report bloodstream infections (BSIs) using NHSN starting in 2012 as part of ESRD’s Quality Incentive Program. CMS has also indicated it might expand reporting to include HAIs that occur after procedures in ambulatory surgical centers.

Federal activities on HAIs have not been limited to payment policies. CDC and CMS have intensified their partnership to align healthcare facility inspections with evidence-based CDC/HICPAC guidelines and recommendations included in the Society for Healthcare Epidemiology/Association of Professionals in Infection Control and Epidemiology/American Hospital Association/Infectious Diseases Society of America Compendium [8]. CDC is working with CMS to develop tools, survey instruments, and training materials for CMS surveyors to better assess infection control practices in acute care and outpatient settings. Results from more standardized approaches to surveying outpatient settings have revealed a major lack of adherence to basic infection control practices (eg, reuse of syringes) in these settings.

**State Level**

Unlike diseases such as tuberculosis, for which there is a coordinator in every state, almost no state health department had staff dedicated to working on HAIs prior to 2009. Indeed, there was a prevailing sentiment that HAIs were not in the purview of “traditional” public health. This situation has changed dramatically in the past several years.

State health department involvement in HAI prevention began to shift dramatically in the early 2000s with the passage of the first state public reporting laws on HAIs. These laws required healthcare facilities to report information on HAIs to the state health department and required that the state health department take responsibility for sharing these data with the public. These laws have quickly put health departments not just in the midst but at the forefront of state-based HAI work. Currently, 28 states and the District of Columbia have passed laws mandating public reporting of HAIs using the CDC’s NHSN as the reporting system, and more states are considering such legislation.

In response to the challenge of the state HAI plan requirement in the 2009 Omnibus Bill, and with technical support from CDC, all 50 states assembled multidisciplinary HAI advisory groups to develop and implement state action plans. As these advisory groups have become more cohesive and state leadership has become stronger, activities have expanded from simply setting prevention targets to planning and implementing prevention efforts and, more recently, to reviewing state HAI data to inform further action. Federal funds also provided for dedicated staff within the health department—the HAI coordinator—to oversee implementation of the state HAI action plan. Although it was clear that one person could not single-handedly implement the state plan, designated HAI coordinators have worked toward the goal of developing an infrastructure that will promote and assist in HAI prevention efforts. HAI coordinators have played a key role in promoting HAI awareness and training in many states.

The lessons learned by state health departments from public reporting requirements are guiding the future of HAI surveillance. State health departments are becoming important partners on the intricacies, strengths, and limitations of HAI surveillance, and are working actively with CDC to advance the science of HAI surveillance. For example, experience in several states has shown that data validation not only improves confidence in the data, but also helps drive prevention efforts because both providers and the public believe the data merit action. Moreover, some states are using validation methods to identify both potentially high- and low-performing hospitals and are visiting these facilities to learn about HAI activities. These interactions with healthcare epidemiologists and infection preventionists are helping local officials learn more about effective strategies to prevent HAIs.

Recent data highlight the growing role of state health departments in HAI prevention efforts. Prior to the national action plan and federal investments for state prevention activities, only 2 state health departments reported that they were leading any type of HAI prevention effort. However, <2 years after ARRA funds were distributed, 20 states reported that they had initiated a statewide HAI prevention collaborative. Additionally, 17 states reported that they had used these funds to expand an existing statewide prevention collaborative.

As efforts to expand HAI prevention move beyond acute care hospitals and into the full spectrum of healthcare delivery, the
potential role of state health departments becomes even greater. The challenges of multidrug-resistant organisms and *Clostridi um difficile* highlight the fact that prevention efforts must bring all facilities within a region together to develop a coordinated response [9, 10]. Although individual healthcare facilities must be responsible for preventing infections within their walls, it is public health’s responsibility to bring healthcare facilities together to develop a regional response to HAIs.

The growing role of state health departments in HAI prevention work was highlighted during a 2010 national stakeholders meeting on HAIs hosted by the HHS Office of Healthcare Quality. In response to the question “which entity is best suited to lead state HAI prevention activities?” more attendees selected the state health department than any other entity. Respondents indicated that the state HAI leader needed to be transparent, publicly accountable, and able to work across the spectrum of healthcare and stated that the state health department was most able to meet these needs.

**HARMONIZATION OF HAI METRICS/SYSTEMS—NHSN EXPANSION**

A major victory of the national action plan has been the increased harmonization of state and federal HAI reporting systems and HAI measures and metrics. This is reflected in the growing use of CDC’s NHSN by other federal agencies. As mentioned previously, rather than create a new system for HAI reporting, CMS worked with CDC to make NHSN the reporting platform for the implementation of value-based purchasing in the IPPS and ESRD programs. CMS is also using NHSN as the reporting system for HAI activities in the 9th and 10th scopes of work for the quality improvement organizations. Likewise, CDC and AHRQ have worked together so that NHSN could support reporting of CLABSIs for hospitals participating in the AHRQ-funded “On the CUSP: Stop BSI” initiative.

This measure alignment has led to a dramatic increase in participation in NHSN, from 300 healthcare facilities when it was launched in 2006 to >5000 healthcare facilities by December 2011. The use of NHSN as a national HAI reporting system addresses an important criticism of the 2008 GAO report by providing one surveillance system for all healthcare facilities, state health departments, and federal agencies. NHSN data can now not only be used by facilities to monitor and target HAI prevention efforts, but can also be used for these same purposes by multifacility prevention collaborators and state health departments. On the regulatory side, NHSN data is also being used to support public reporting laws and CMS reporting mandates. Finally, at the national level, NHSN is being used to track progress in meeting many of the goals of the HHS HAI action plan.

**CHALLENGES AND FUTURE DIRECTION**

The expansion of HAI activities has not come without problems. Although major progress is being made, coordinating all HAI activities of federal and state agencies remains a work in progress. Implementation of the IPPS and ESRD reporting require that data being used to determine payment be properly validated; CMS and CDC are working together to address this critical need. There is also the challenge of ensuring that NHSN infrastructure can support growing needs of states and federal uses and mandates. CDC is committed to continuously improving NHSN so the system can better meet the needs of a growing number of users and functions and support accurate yet simple reporting specifications, minimal variability in case finding, and data validation [11]. As we move toward e-surveillance, we are working closely with several partners for the effective use of electronic health records information in NHSN, including health information technology vendors, Health Level Seven International, hospitals using vendor systems, and experts in the field.

State health departments are increasingly challenged by trying to meet growing demands to expand HAI prevention efforts with rapidly declining resources. Federal investments and technical support have helped enormously, but variability in state support for HAI prevention has created an uneven national landscape. Even states that do have robust HAI programs are worried about their ability to sustain these efforts. Validation of HAI data also remains a major need and challenge for state health departments. Several states have played a lead role in developing innovative approaches to validating HAI data, and CDC is working with these states to develop a spectrum of validation activities that will assist state validation efforts. However, most states do not have sufficient resources to conduct thorough HAI validation.

Resource issues also present major challenges at the facility level. HAI prevention efforts in the United States have been built on the efforts of front-line healthcare epidemiologists and infection preventionists [12]. Although the prominence of their work and the demands on their time have increased dramatically, most have not seen corresponding increases in support for their efforts.

Implementation of the action plan in non-acute care settings such as dialysis clinics, ambulatory surgery centers, and nursing homes will also create new challenges as we seek to refine and adapt surveillance definitions and metrics. However, expansion in this area represents an important step to better define the HAI problem in these settings.

The HHS Action Plan to Prevent HAIs has raised nationwide awareness of HAIs and their prevention, and provides an infrastructure and tools to meet the challenges of HAIs at multiple levels. HAI prevention is now an important topic in
The plan has established national prevention goals also used in other HHS initiatives, such as Healthy People 2020 and the Partnership for Patients. NHSN is being used by an ever-increasing number of state health agencies, making it easier to evaluate healthcare facilities' infection prevention programs and creating a repository of more and better data from which we can collectively draw. Recent NHSN and Emerging Infections Program data to assess national progress toward the 5-year HHS HAI action plan goals show significant decreases in device- and procedure-associated infections as well as healthcare-associated invasive MRSA compared to the baseline (Figure 1). Although the action plan did not create new knowledge of or systems for HAI prevention in acute care hospitals, it is facilitating collaborative efforts to accelerate progress. The goal of the action plan is to expand prevention successes of device-related HAIs in ICU patients reported in the past decade [13–17].

CDC will continue its commitment to use quality data and science to prevent HAIs. We will continue to work with experts in healthcare epidemiology and public health to improve surveillance systems and quality reporting methods and to identify gaps in infection prevention. We will also continue to work with consumers to inform and protect patients. CDC will also continue to build upon the work of the HHS Action Plan to Prevent HAIs by deepening our relationship with other state and federal agencies. We will continue to work with health departments to identify and respond to emerging threats across healthcare; with AHRQ to address prevention implementation research questions; with the Food and Drug Administration to identify product contamination or misuse in healthcare settings; and with CMS to ensure consistent, quality reporting and to raise the standard of care for patients nationwide. As the regulatory framework for HAIs expands, it will be increasingly important to carefully evaluate the impacts of these changes, both positive and negative, and work on improvements and refinements when needed. Collaboration focused on quality data and science must continue to inform and define national initiatives and policies as we move toward the elimination of HAIs.

Notes

Disclaimer. The findings and conclusion in this report are those of the authors and do not necessarily represent the official position of the CDC.
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