

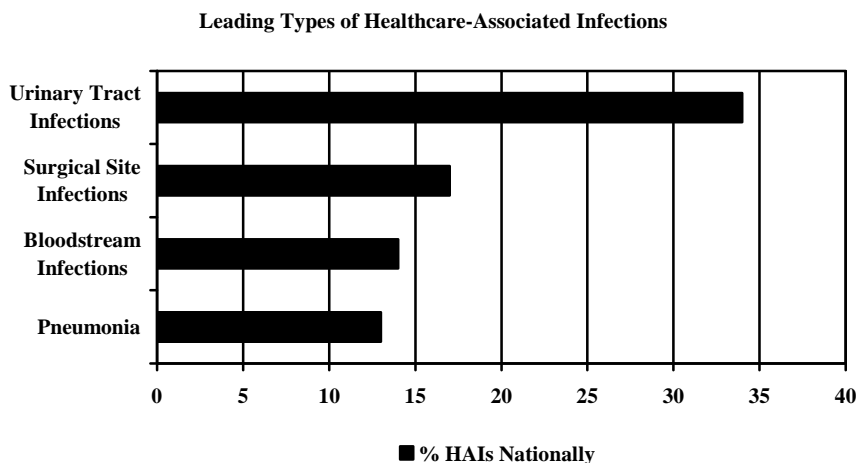
HHS Action Plan to Prevent Healthcare-Associated Infections: INTRODUCTION

Background

Healthcare-associated infections (HAIs) are infections that patients acquire while receiving treatment for medical or surgical conditions. HAIs occur in all settings of care, including hospital acute care units and same day surgical centers, ambulatory outpatient care clinics, and long-term care facilities, such as nursing homes and rehabilitation centers. The infections are associated with a variety of causes, including but not limited to the use of medical devices, such as catheters and ventilators, complications following surgical procedures, transmission between patients and healthcare workers, or are the result of antibiotic overuse. Also, HAI are caused by a variety of infectious agents, including bacteria, fungi, and viruses.

Healthcare-associated infections exact a significant toll on human life. They are among the top ten leading causes of death in the United States, accounting for an estimated 1.7 million infections and 99,000 associated deaths in 2002.¹ In hospitals, they are a significant cause of morbidity and mortality. Hospital stays for Methicillin-resistant *Staphylococcus aureus* (MRSA) infection have more than tripled since 2000 and have increased nearly ten-fold since 1995.²

Four categories of infections account for approximately three quarters of HAIs in the acute care hospital setting. The frequency of these infections varies by location. Currently, urinary tract infections comprise the highest percentage (34%) of HAIs followed by surgical site infections (17%), bloodstream infections (14%), and pneumonia (13%).³ The chart below indicates the leading types of HAI on a national scale.



¹ Klevens RM, Edwards J, Richards C, Horan T, Gaynes R, Pollock D, Cardo D. Estimating Health Care-Associated Infections and Deaths in U.S. Hospitals, 2002. *Public Health Reports* 2007; 122:160-166.

² Elixhauser A and Steiner C. Infections with Methicillin-Resistant *Staphylococcus Aureus* (MRSA) in U.S. Hospitals, 1993–2005. *AHRQ Healthcare Cost and Utilization Project Statistical Brief* 2007; 35:1-10.

³ Klevens RM, Edwards J, Richards C, Horan T, Gaynes R, Pollock D, Cardo D. Estimating Health Care-Associated Infections and Deaths in U.S. Hospitals, 2002. *Public Health Reports* 2007; 122:160-166.

In addition to the substantial human suffering exacted by HAIs, the financial burden attributable to these infections is staggering. It is estimated that HAIs incur nearly \$20 billion in excess healthcare costs each year.^{4,5,6} Whereas not all *Staphylococcus aureus* infections are healthcare-associated, healthcare charges for *Staphylococcus aureus* bloodstream infections for Medicare patients exceeded \$2.5 billion in 2005.⁷ The table below illustrates the estimated annual hospital cost per infection by infection site.

Estimated Annual Hospital Cost of Healthcare-Associated Infections by Site of Infection^{8,9}

Major Site of Infection	Total Infections	Hospital Cost Per Infection	Total Annual Hospital Cost (in Millions)	Deaths Per Year
Surgical Site Infection	290,485	\$25,546	\$7,421	13,088
Central Line-Associated Bloodstream Infection	248,678	\$36,441	\$9,062	30,665
Ventilator-Associated Pneumonia (Lung Infection)	250,205	\$9,969	\$2,494	35,967
Catheter-Associated Urinary Tract Infection	561,667	\$1,006	\$565	8,205

Despite the sobering facts, healthcare-associated infections are largely preventable and can be drastically reduced in order to save lives and avoid excess costs. The growing demands on the healthcare system, coupled with concerns of antimicrobial-resistant pathogens and rising healthcare costs, reinforce the imperative to address this issue.

HHS Steering Committee

In recognition of this important public health and patient safety problem, the Department of Health and Human Services (HHS) is presenting a plan to prevent HAIs over the next several years. Successful infection prevention and elimination efforts have been underway for years at the various Operating Divisions of HHS. However, in 2008, HHS began a concerted, Departmental-wide effort to more comprehensively approach the issue. The goal is to marshal the extensive resources of HHS and collaborate effectively with public and private sector partners to accomplish the large-scale prevention of HAIs.

⁴ Stone PW, Braccia D, Larson E. Systematic Review of Economic Analysis of Health Care-Associated Infections. *American Journal of Infection Control* 2005; 33:501-509.

⁵ Roberts RR, Scott RD, Cordell R, Solomon SL, Steele L, Kempe LM, Trick WE, Weinstein RA. The Use of Economic Modeling to Determine the Hospital Costs Associated with Nosocomial Infections. *Clinical Infectious Diseases* 2003; 36:1424-1432.

⁶ Stone P, Larson E, Kavar LN. A systematic audit of economic evidence linking Nosocomial infections and infection control interventions: 1990-2000. *American Journal of Infection Control* 2002; 30,3:145-152.

⁷ <http://hcupnet.ahrq.gov/>

⁸ Stone PW, Braccia D, Larson E. Systematic Review of Economic Analysis of Health Care-Associated Infections. *American Journal of Infection Control* 2005; 33:501-509.

⁹ Roberts RR, Scott RD, Cordell R, Solomon SL, Steele L, Kempe LM, Trick WE, Weinstein RA. The Use of Economic Modeling to Determine the Hospital Costs Associated with Nosocomial Infections. *Clinical Infectious Diseases* 2003; 36:1424-1432.

In March 2008, the Government Accountability Office (GAO) completed a review of HAIs in hospitals.¹⁰ The GAO acknowledged HHS-supported efforts and encouraged the Department to further its leadership of addressing HAIs through enhanced coordination of all prevention activities. In particular, the report directed the Department to prioritize existing recommended infection control practices to facilitate their implementation in healthcare facilities. The various information technology systems used to measure HAIs were also highlighted in the report. While there are numerous systems and databases collecting HAI-related data across HHS, the GAO noted a need for greater consistency and compatibility of the data to enhance the information provided, including national estimates of the major types of HAIs.

The Department is committed to protecting the health and safety of all Americans and reducing unnecessary and exorbitant healthcare costs. In response to this important problem, HHS has undertaken several inter-agency initiatives to improve and expand HAI prevention efforts. One of these initiatives was the establishment of the HHS Steering Committee for the Prevention of Healthcare-Associated Infections (Steering Committee).

The Steering Committee included senior-level representatives from the Offices and Operating Divisions of HHS and was chaired by the Principal Deputy Assistant Secretary for Health. The HHS Deputy Secretary charged the Steering Committee with developing an Action Plan to Prevent HAIs. This plan establishes national goals and outlines key actions for enhancing and coordinating HHS-supported efforts. In addition, the plan outlines opportunities for collaboration with external partners to maximize the efforts of all stakeholders.

The Steering Committee utilized a working group structure to accomplish its charge. Each of the five working groups enumerated strategies for accomplishing a portion of the Action Plan:

- The *Prevention and Implementation* group, in partnership with the HHS Healthcare Infection Control Practices Advisory Committee (HICPAC), prioritized existing recommended clinical practices to facilitate implementation in healthcare organizations.
- The *Research* group identified gaps in the existing knowledge base of current infection control practices and developed a coordinated research agenda to strengthen the science for infection control prevention in hospitals.
- The *Incentive and Oversight* group explored opportunities for evaluating compliance with infection control practices in hospitals through required certification processes and identified additional options for the use of payment policies and financial incentives to motivate organizations to provide better, more efficient care.

¹⁰ United States Government Accountability Office. Health-Care-Associated Infections in Hospitals. GAO-08-283, Washington, DC, April 2008.

- The *Information Systems and Technology* group established a plan to progress towards the standardized measures and data definitional alignment needed to measure HAIs across agencies and provided opportunities to make the varied HHS data systems interoperable to enhance understanding of HAIs.
- The *Outreach and Messaging* group developed a plan for national messaging regarding HAI prevention to raise awareness among various stakeholder groups across the United States.

Tier One of the Initiative

Given the substantial breadth and depth of HAIs, the Steering Committee decided to concentrate its activities on a first tier of six high priority HAI-related areas within the acute care hospital setting. Surgical site infections, central line-associated bloodstream infections, ventilator-associated pneumonia, and catheter-associated urinary tract infections account for approximately three quarters of HAIs in the acute care hospital setting.¹¹ Thus, these four infection categories were included in the initiative's first tier.

In addition, the Steering Committee believed it was important to address an emerging HAI issue, and therefore decided to include two organism specific priorities: *Clostridium difficile*, as well as Methicillin-resistant *Staphylococcus aureus* (MRSA) in its first tier efforts. A recent publication demonstrated that *Clostridium difficile* is occurring almost as frequently in the hospital setting as MRSA, impacting resource use and inpatient mortality.¹² MRSA is addressed as a causative organism, given its contribution to the four HAI priority procedures.

While remaining aware of the larger issues regarding HAI prevention, the Action Plan focuses on the setting, procedures, and organisms defined in the first phase. Subsequent stages of the initiative will address additional HAI areas and other types of healthcare facilities (long-term care, nursing homes, ambulatory care settings, etc.).

Key Partnerships

Recognizing that the national prevention of HAIs is a shared responsibility of the government, healthcare industry, and consumers, partnerships are critical to making and sustaining progress in achieving the goals outlined in this plan. As an initial step, the Steering Committee has launched efforts to ensure appropriate stakeholder engagement and input into the development of its Action Plan.

In September 2008, the Department, led by the Centers for Disease Control and Prevention (CDC), convened a meeting of key stakeholders from academia, federal and

¹¹ Klevens RM, Edwards J, Richards C, Horan T, Gaynes R, Pollock D, Cardo D. Estimating Health Care-Associated Infections and Deaths in U.S. Hospitals, 2002. *Public Health Reports* 2007; 122:160-166.

¹² Elixhauser A and Jung M. Clostridium Difficile-Associated Disease in U.S. Hospitals, 1993–2005. *AHRQ Healthcare Cost and Utilization Project Statistical Brief* 2008; 50:1-11.

state governments, consumer groups, etc. with the purpose of soliciting individual input on the setting of national potential prevention targets. At this meeting held in Washington, D.C., foremost experts across the nation identified near- and long-term process and outcome measures for benchmarking progress in the prevention of HAIs.

As this plan begins to be implemented across the nation, HHS will look to its partners to help amplify key messages and the adoption of recommended practices. We can and will accomplish more together, working hand in hand, focused on the end goal of preventing unnecessary infections and their associated consequences.

As with many current and emerging healthcare issues, the success of the nation's healthcare system cannot be measured by the Department's efforts alone. Rather, success in preventing HAIs will be directly dependent on the creation of effective partnerships across the federal government, states, communities, and other private and public organizations to help build and sustain capacity to promote the health and protect the safety of all Americans.