



State of Wyoming
Department of Health

Healthcare-Associated Infection (HAI) Prevention Plan

Second Edition

Preventative Health and Safety Division
Wyoming Department of Health
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**State of Wyoming
Department of Health**

**Healthcare-Associated Infection (HAI)
Prevention Plan, 2015**

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Executive Summary

Healthcare-associated infections (HAI) are infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting. Healthcare settings can include not only acute care facilities, but also long-term care, outpatient surgery centers, dialysis centers, and clinics. The majority of information known about the burden of HAIs is from acute care settings such as intensive care units (ICUs) and special care units. Within these settings, there has been a notable rise in the risk of HAI. In 2011, a large sample of U.S. acute care settings found that on any given day, 1 in 25 hospital patients in acute care settings has at least one HAI (more than half of all HAIs occur outside of the intensive care unit).¹ This leads to 775,000 patients dying each year during their hospitalizations because of these HAIs.¹

In accordance with fulfillment of the 2009 Omnibus bill which requires states receiving Preventive Health and Health Services (PHHS) Block Grant funds to certify that they will submit a plan to reduce HAIs to the Secretary of Health and Human Services, the following document details the State of Wyoming HAI prevention plan. Additionally, the Wyoming HAI prevention plan will help ensure progress towards national prevention targets as described in the Health and Human Services Action Plan to Prevent Healthcare-Associated Infections (HHS Action Plan).

HAI surveillance and prevention in Wyoming is still focused on acute care facilities; although, the need for prevention activities for outpatient settings is recognized. In addition, the plan will be focused on surveillance, but in the future implementation of prevention oriented activities will occur once we learn the status of HAI in Wyoming.

Current activities for HAI prevention include designating a State HAI Prevention Coordinator, using established protocols for health department staff to investigate outbreaks, clusters or unusual cases of HAIs, using mechanisms already in place to protect the participating facilities, providers and patients, and identifying Clostridium difficile Infections (CDI) and Methicillin-resistant Staphylococcus aureus (MRSA) infections as two priority prevention targets for surveillance. The state has also developed a dedicated infection prevention workgroup called Wyoming Infection Prevention Advisory Group (WIPAG).

The following tables indicate the determined priorities for developing or enhancing the state of Wyoming HAI prevention activities in the four areas identified below:

1. Enhance HAI Program Infrastructure
2. Surveillance, Detection, Reporting, and Response
3. Prevention
4. Evaluation and Communication
5. Healthcare Infection Control and Response (Ebola-Related Activities)

1. Centers for Disease Control and Prevention. (2015, January 12). Healthcare-associated Infections - Data and Statistics.

1. Enhance HAI program infrastructure

Successful HAI prevention requires close integration and collaboration with state and local infection prevention activities and systems. Consistency and compatibility of HAI data collected across facilities will allow for greater success in reaching state and national goals. Please select areas for development or enhancement of state HAI surveillance, prevention, and control efforts.

Table 1: State infrastructure planning for HAI surveillance, prevention, and control.

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	1. Establish statewide HAI prevention leadership through the formation of multidisciplinary group or state HAI advisory council <ul style="list-style-type: none"> i. Collaborate with local and regional partners (e.g., state hospital associations, professional societies for infection control and healthcare epidemiology, academic organizations, laboratorians, and networks of acute care hospitals and long term care facilities). 	Ongoing
☒	☐	<ul style="list-style-type: none"> ii. Include hospital preparedness partners (e.g., hospital/healthcare coalitions funded through the ASPR Hospital Preparedness Program). Additional representation from accrediting and/or licensing agency with surveyor authority is ideal. iii. Engage HAI advisory committee in potential roles and activities to improve antibiotic use in the state (antibiotic stewardship) iv. Engage HAI advisory committee in activities to increase health department's access to data and subsequently use those data in prevention efforts 	October 1, 2015
☒	☐	<ul style="list-style-type: none"> iv. Identify specific HAI prevention targets consistent with HHS priorities 	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		<p><i>Other activities or descriptions:</i></p> <p>1.i. The Wyoming Infection Prevention Advisory Group (WIPAG) includes representatives from the state department of health, Mountain Pacific Quality Health, End Stage Renal Disease (ESRD) Network #15, Wyoming Hospital Association, 10+ individual hospitals, and more.</p> <p>1.ii. WIPAG has expanded to include representatives from the Wyoming Department of Health (WDH) Hospital Preparedness Program and Public Health Emergency Preparedness Program.</p> <p>1.iii. The committee has an antibiotic stewardship subcommittee that is collaborating with hospitals and actively developing a guide for implementing antibiotic stewardship programs statewide.</p> <p>1.iv. WDH does not have access to patient level National Health Safety Network (NHSN) data (and Wyoming does not have statutes or regulations to require hospitals to use NHSN to report HAI to public health), so we collaborate with Mountain Pacific Quality Health (MPQH) who works with facilities on encouraging NHSN use and they aggregate statewide rates on Catheter utilization, CAUTI, CDI, Central line utilization, and CLABSI. Those reports are discussed at the monthly WIPAG meetings.</p> <p>1.iv. WIPAG's antibiotic stewardship committee is developing their recommendations based on HHS priorities.</p>	
☒	☐	<p>2. Establish an HAI surveillance prevention and control program</p> <p style="padding-left: 40px;">i. Designate a State HAI Prevention Coordinator</p>	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ii. Develop dedicated, trained HAI staff with at least one FTE (or contracted equivalent) to oversee HAI activities areas (Integration, Collaboration, and Capacity Building; Reporting, Detection, Response, and Surveillance; Prevention; Evaluation, Oversight, Communication, and Infection Control) 	Pending further funding
		<p><i>Other activities or descriptions:</i> We have previously designated a State HAI Surveillance Coordinator whom will also serve as the Prevention Education Coordinator.</p>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>3. Integrate laboratory activities with HAI surveillance, prevention, and control efforts.</p> <ul style="list-style-type: none"> i. Improve laboratory capacity to confirm emerging resistance in HAI pathogens and perform typing where appropriate (e.g., outbreak investigation support, HL7 messaging of laboratory results) 	Ongoing
		<p><i>Other activities or descriptions:</i> 3i. The Wyoming Public Health lab has the capability to confirm vancomycin intermediate Staphylococcus aureus (VISA), vancomycin resistant Staphylococcus aureus (VRSA), methicillin resistant Staphylococcus aureus (MRSA), vancomycin resistant Enterococci (VRE), and drug resistant Streptococcus pneumoniae (DRSP), in addition to providing susceptibility testing for many other organisms. They are available and ready to assist with outbreak investigation support and are in the process of exploring implementing HL7 messaging of laboratory reports.</p>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>4. Improve coordination among government agencies or organizations that share responsibility for assuring or overseeing HAI surveillance, prevention, and control (e.g., State Survey agencies, Communicable</p>	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Disease Control, state licensing boards)	
		<p><i>Other activities or descriptions:</i> Coordination occurs regularly between members of WIPAG. Monthly scheduled meetings and an annual infection prevention conference facilitate regular discussion of ideas and issues surrounding HAI prevention in the state. Other information is shared through a state infection preventionist (IP) email listserve. In addition, the HAI prevention coordinator regularly collaborates with the state healthcare licensing board to answer questions on infection prevention from facilities. The HAI Prevention Coordinator from WDH and the HAI Coordinator from MPQH also collaborate regularly.</p>	
<input type="checkbox"/>	<input type="checkbox"/>	<p>5. Facilitate use of standards-based formats (e.g., Clinical Document Architecture, electronic messages) by healthcare facilities for purposes of electronic reporting of HAI data. Providing technical assistance or other incentives for implementations of standards-based reporting can help develop capacity for HAI surveillance and other types of public health surveillance, such as for conditions deemed reportable to state and local health agencies using electronic laboratory reporting (ELR). Facilitating use of standards-based solutions for external reporting also can strengthen relationships between healthcare facilities and regional nodes of healthcare information, such as Regional Health Information Organizations. (RHIOs) and Health Information Exchanges (HIEs). These relationships, in turn, can yield broader benefits for public health by consolidating electronic reporting through regional nodes.</p>	
		<p><i>Other activities or descriptions:</i></p>	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation

2. Surveillance, Detection, Reporting, and Response

Timely and accurate monitoring remains necessary to gauge progress towards HAI elimination. Public health surveillance has been defined as the ongoing, systematic collection, analysis, and interpretation of data essential to the planning, implementation, and evaluation of public health practice, and timely dissemination to those responsible for prevention and control.¹ Increased participation in systems such as the National Healthcare Safety Network (NHSN) has been demonstrated to promote HAI reduction. This, combined with improvements to simplify and enhance data collection, and improve dissemination of results to healthcare providers and the public are essential steps toward increasing HAI prevention capacity.

The HHS Action Plan identifies targets and metrics for five categories of HAIs and identified Ventilator-associated Pneumonia as an HAI under development for metrics and targets (Appendix 1):

- Central Line-associated Blood Stream Infections (CLABSI)
- *Clostridium difficile* Infections (CDI)
- Catheter-associated Urinary Tract Infections (CAUTI)
- Methicillin-resistant *Staphylococcus aureus* (MRSA) Infections
- Surgical Site Infections (SSI)
- Ventilator-associated Pneumonia (VAP)

State capacity for investigating and responding to outbreaks and emerging infections among patients and healthcare providers is central to HAI prevention. Investigation of outbreaks helps identify preventable causes of infections including issues with the improper use or handling of medical devices; contamination of medical products; and unsafe clinical practices.

¹ Thacker SB, Berkelman RL. Public health surveillance in the United States. *Epidemiol Rev* 1988;10:164-90.

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		<p>outbreak response.</p> <p>1iii. We have protocols in line with HIPAA to protect patient/facility/provider confidentiality.</p> <p>1iv. MPQH aggregates NHSN surveillance data and WIPAG reviews it regularly. The Communicable Disease Epidemiology Program is responsible for routine surveillance of Hepatitis B and C as well as outbreak response. Only VISA, VRSA, and clusters of VRE and MRSA are reportable, but the HAI prevention coordinator monitors those reports and would respond to outbreaks in healthcare facilities.</p>	
<input type="checkbox"/>	<input type="checkbox"/>	2. Enhance laboratory capacity for state and local detection and response to new and emerging HAI issues.	
		<i>Other activities or descriptions:</i>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Improve communication of HAI outbreaks and infection control breaches	Ongoing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> i. Develop standard reporting criteria including, number, size, and type of HAI outbreak for health departments and CDC ii. Establish mechanisms or protocols for exchanging information about outbreaks or breaches among state and local governmental partners (e.g., State Survey agencies, Communicable Disease Control, state licensing boards) 	Ongoing
		<i>Other activities or descriptions:</i>	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		<p>3i. All 27 hospitals in Wyoming report data to NHSN and any outbreaks are reportable. WDH follows up on all outbreaks with standardized procedures.</p> <p>3ii. The WDH Office of Healthcare Licensing and Surveys regularly collaborates with the HAI prevention coordinator and notifies the epidemiology section whenever healthcare facilities see infections beyond their baseline levels.</p>	<p>Ongoing</p> <p>Ongoing</p>
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>4. Identify at least 2 priority prevention targets for surveillance in support of the HHS HAI Action Plan</p> <ul style="list-style-type: none"> i. Central Line-associated Bloodstream Infections (CLABSI) ii. <i>Clostridium difficile</i> Infections (CDI) iii. Catheter-associated Urinary Tract Infections (CAUTI) iv. Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) Infections v. Surgical Site Infections (SSI) vi. Ventilator-associated Pneumonia (VAP) 	
		<p><i>Other activities or descriptions:</i></p>	
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<p>5. Adopt national standards for data and technology to track HAIs (e.g., NHSN).</p> <ul style="list-style-type: none"> i. Develop metrics to measure progress towards national goals (align with targeted state goals). (See Appendix 1). ii. Establish baseline measurements for prevention targets 	<p>Ongoing</p> <p>Ongoing</p>

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		<p><i>Other activities or descriptions:</i></p> <p>5i. We will use the <i>C. difficile</i> SIR and the MRSA incidence rate (per 100,000 infections) as our metrics for measuring progress toward national goals in accordance with HHS Action Plans. The HAI Prevention Coordinator will present the MRSA Bacteremia SIR to WIPAG to see if it is a metric that current reporting methods would allow the state to adopt.</p> <p>5ii. All healthcare facilities are encouraged to track their baseline levels of HAIs, and MPQH aggregates the data to track a statewide baseline. WIPAG regularly reviews the data to evaluate whether prevention targets need to be adjusted.</p>	Ongoing and 12/2015
<input type="checkbox"/>	<input type="checkbox"/>	<p>6. Develop state surveillance training competencies</p> <p style="padding-left: 40px;">i. Conduct local training for appropriate use of surveillance systems (e.g., NHSN) including facility and group enrollment, data collection, management, and analysis</p>	
		<p><i>Other activities or descriptions:</i></p>	
<input type="checkbox"/>	<input type="checkbox"/>	<p>7. Develop tailored reports of data analyses for state or region prepared by state personnel</p>	
		<p><i>Other activities or descriptions:</i></p> <p>WDH does not have access to NHSN data. MPQH compiles aggregate reports of statewide data and distributes them appropriately, but they are not prepared by state personnel.</p>	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<p>8. Validate data entered into HAI surveillance (e.g., through healthcare records review, parallel database comparison) to measure accuracy and reliability of HAI data collection</p> <ul style="list-style-type: none"> i. Develop a validation plan ii. Pilot test validation methods in a sample of healthcare facilities iii. Modify validation plan and methods in accordance with findings from pilot project iv. Implement validation plan and methods in all healthcare facilities participating in HAI surveillance v. Analyze and report validation findings vi. Use validation findings to provide operational guidance for healthcare facilities that targets any data shortcomings detected 	<p>Pending further funding</p>
		<p><i>Other activities or descriptions:</i> WDH did not receive funding to complete a validation pilot study. We have validation tools that have been distributed to the facilities and are available to them for voluntary use.</p>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>9. Develop preparedness plans for improved response to HAI</p> <ul style="list-style-type: none"> i. Define processes and tiered response criteria to handle increased reports of serious infection control breaches (e.g., syringe reuse), suspect cases/clusters, and outbreaks 	<p>10/2018</p>
		<p><i>Other activities or descriptions:</i> The HAI Prevention Coordinator will work on developing HAI</p>	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		statewide preparedness plans by consulting with the WDH Preparedness Programs and WIPAG.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	10. Collaborate with professional licensing organizations to identify and investigate complaints related to provider infection control practice in non-hospital settings and set standards for continuing education and training	Ongoing
		<i>Other activities or descriptions:</i> The WDH Office of Healthcare Licensing and Surveys collaborates with the HAI prevention coordinator to identify and respond to concerns about infection control practices in nursing homes and dialysis centers.	
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>	11. Adopt integration and interoperability standards for HAI information systems and data sources i. Improve overall use of surveillance data to identify and prevent HAI outbreaks or transmission in HC settings (e.g., hepatitis B, hepatitis C, multi-drug resistant organisms (MDRO), and other reportable HAIs) across the spectrum of inpatient and outpatient healthcare settings ii. Promote definitional alignment and data element standardization needed to link HAI data across the nation.	7/2017
		<i>Other activities or descriptions:</i> 11i. The Communicable Disease Epidemiology Program uses their	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		<p>routine surveillance data to identify and respond to transmission of hepatitis B and C in all inpatient and outpatient healthcare settings. VISA, VRSA, and clusters of VRE and MRSA are reportable and the HAI Prevention Coordinator who is responsible for responding to reports of those diseases and follow-up. Individual C. diff, MRSA, CLABSI, SSI, or CAUTIs are not reportable to WDH, and are voluntarily reported through NHSN. However, the HAI Prevention Coordinator collaborates with MPQH to monitor NHSN surveillance data and monitor any trends or increases. If there were clusters or outbreaks in any inpatient or outpatient facility, the WDH infectious disease epidemiology unit would respond and investigate.</p> <p>11ii. WIPAG will review the data that is entered into NHSN currently and ensure that it meets the national definitions as explained in Appendix 1.</p>	
<input type="checkbox"/>	<input type="checkbox"/>	<p>12. Enhance electronic reporting and information technology for healthcare facilities to reduce reporting burden and increase timeliness, efficiency, comprehensiveness, and reliability of the data</p> <p style="padding-left: 40px;">i. Report HAI data to the public</p>	
<input type="checkbox"/>	<input type="checkbox"/>	<p><i>Other activities or descriptions:</i></p>	
<input type="checkbox"/>	<input type="checkbox"/>	<p>13. Make available risk-adjusted HAI data that enable state agencies to make comparisons between hospitals.</p>	
		<p><i>Other activities or descriptions:</i></p>	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
<input type="checkbox"/>	<input type="checkbox"/>	14. Enhance surveillance and detection of HAIs in nonhospital settings	
		<i>Other activities or descriptions:</i>	

3. Prevention

State implementation of HHS Healthcare Infection Control Practices Advisory Committee (HICPAC) recommendations is a critical step toward the elimination of HAIs. CDC and HICPAC have developed evidence-based HAI prevention guidelines cited in the HHS Action Plan for implementation. These guidelines are translated into practice and implemented by multiple groups in hospital settings for the prevention of HAIs. CDC guidelines have also served as the basis for the Centers for Medicare and Medicaid Services (CMS) Surgical Care Improvement Project. These evidence-based recommendations have also been incorporated into Joint Commission standards for accreditation of U.S. hospitals and have been endorsed by the National Quality Forum. Please select areas for development or enhancement of state HAI prevention efforts.

Table 3: State planning for HAI prevention activities

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
<input type="checkbox"/>	<input type="checkbox"/>	1. Implement HICPAC recommendations <ul style="list-style-type: none"> i. Develop strategies for implementation of HICPAC recommendations for at least 2 prevention targets specified by the state multidisciplinary group. 	
		<i>Other activities or descriptions:</i>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Establish prevention working group under the state HAI advisory council to coordinate state HAI collaboratives <ul style="list-style-type: none"> i. Assemble expertise to consult, advise, and coach inpatient healthcare facilities involved in HAI prevention collaboratives 	Ongoing
		<i>Other activities or descriptions:</i>	
		3. Establish HAI collaboratives with at least 10 hospitals (this may require a multi-state or regional collaborative in low population	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	density regions) i. Identify staff trained in project coordination, infection control, and collaborative coordination ii. Develop a communication strategy to facilitate peer-to-peer learning and sharing of best practices iii. Establish and adhere to feedback from standardized outcome data to track progress	
		<i>Other activities or descriptions:</i> WIPAG is comprised of infection control professionals from 10+ hospitals. MPQH creates monthly statewide summary reports to distribute and review. To facilitate regular communication, WIPAG holds a monthly conference call as well as an annual in-person infection prevention conference. The HAI Prevention Coordinator utilizes a statewide listserve of infection preventionists (IPs) to keep them informed about the state HAI prevention program, and the IPs utilize the listserve to ask questions, facilitate learning, and share best practices. The regular meetings/calls and the statewide reports serve as our feedback loop.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Develop state HAI prevention training competencies i. Consider establishing requirements for education and training of healthcare professionals in HAI prevention (e.g., certification requirements, public education campaigns, and targeted provider education) or work with healthcare partners to establish best practices for training and certification	Ongoing
		<i>Other activities or descriptions:</i>	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		<p>4i. When initially formed, WIPAG did identify training as one of the most pressing priorities for IPs across the state due to shortages of trained healthcare personnel, small population, and high turnover rates. In response, WIPAG collaborated with experts from across the state to develop the Wyoming Infection Prevention Orientation Manual. While this is not a required training course, it provides a way to train IP personnel. The HAI Prevention Coordinator continues to monitor feedback on the manual and WIPAG will review and respond to that feedback as it comes in.</p> <p>The IP Listserve is also used to inform IPs about educational opportunities, webinars, and training sessions.</p>	
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>5. Implement strategies for compliance to promote adherence to HICPAC recommendations</p> <ul style="list-style-type: none"> i. Consider developing statutory or regulatory standards for healthcare infection control and prevention or work with healthcare partners to establish best practices to ensure adherence ii. Coordinate/liaise with regulation and oversight activities such as inpatient or outpatient facility licensing/accrediting bodies and professional licensing organizations to prevent HAIs iii. Improve regulatory oversight of hospitals, enhance surveyor training and tools, and add sources and uses of infection control data iv. Consider expanding regulation and oversight activities to currently unregulated settings where healthcare is delivered and work with healthcare partners to establish best practices to ensure adherence 	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		<i>Other activities or descriptions:</i> 5i. The WDH Office of Healthcare Licensing and Surveys has regulatory standards in place for healthcare infection control and prevention.	
<input type="checkbox"/>	<input type="checkbox"/>	6. Enhance prevention infrastructure by increasing joint collaboratives with at least 20 hospitals (i.e. this may require a multi-state or regional collaborative in low population density regions)	
		<i>Other activities or descriptions:</i>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7. Establish collaborative(s) to prevent HAIs in nonhospital settings (e.g., long term care, dialysis)	Ongoing
		<i>Other activities or descriptions:</i> WIPAG has members that represent ESRD Network #15 as well as members who work with HAI prevention in nursing homes.	

4. Evaluation and Communication

Program evaluation is an essential organizational practice in public health. Continuous evaluation and communication of findings integrates science as a basis for decision-making and action for the prevention of HAIs. Evaluation and communication allows for learning and ongoing improvement. Routine, practical evaluations can inform strategies for the prevention and control of HAIs. Please select areas for development or enhancement of state HAI prevention efforts.

Table 4: State HAI communication and evaluation planning

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	1. Conduct needs assessment and/or evaluation of the state HAI program to learn how to increase impact <ul style="list-style-type: none"> i. Establish evaluation activity to measure progress toward targets and ii. Establish systems for refining approaches based on data gathered 	07/2017 07/2018
		<i>Other activities or descriptions (not required):</i> 1i. The HAI Prevention Coordinator will have WIPAG meet to review the state HAI plan, seek suggestions for changes, and monitor progress and goals for improvement. 1ii. With the input from WIPAG, the HAI Prevention Coordinator will conduct a formal evaluation of the state HAI plan that identifies target items, goals for implementation, whether or not the goal was met, and action items on what to do next.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Develop and implement a communication plan about the state's HAI program and about progress to meet public and private stakeholders needs <ul style="list-style-type: none"> i. Disseminate state priorities for HAI prevention to healthcare organizations, professional provider organizations, governmental agencies, 	Ongoing

		non-profit public health organizations, and the public	
		<i>Other activities or descriptions:</i> The HAI Prevention Coordinator utilizes multiple channels to communicate information about the state HAI program including listserves, the regular WIPAG meetings/calls, the annual Infection Prevention Conference, and two websites devoted to HAIs and WIPAG.	
<input type="checkbox"/>	<input type="checkbox"/>	3. Provide consumers access to useful healthcare quality measures i. Disseminate HAI data to the public	
		<i>Other activities or descriptions:</i>	
<input type="checkbox"/>	<input type="checkbox"/>	4. Guide patient safety initiatives i. Identify priorities and provide input to partners to help guide patient safety initiatives and research aimed at reducing HAIs	
		<i>Other activities or descriptions:</i>	

5. Healthcare Infection Control and Response (Ebola-associated activities)

The techniques and practice on which infection control protocols are based form the backbone of infectious disease containment for pathogens that are otherwise amplified and accelerated in healthcare settings. Investments in a more robust infection control infrastructure will prevent many HAIs transmitted to, and among, patients and health care workers.

Table 5: Infection Control Assessment and Response

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Create an inventory of all healthcare settings in state. List must include at least one infection control point of contact at the facility	October 1, 2015
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Identify current regulatory/licensing oversight authorities for each healthcare facility and explore ways to expand oversight	
		<p><i>Other activities or descriptions:</i></p> <p>The Infectious Disease Epidemiology unit maintains an updated list of all hospitals with contact information for the infection control point of contact. Since healthcare licensing is the regulatory agency for healthcare settings in the state, the HAI prevention coordinator will work to get a complete list of other healthcare facilities in the state and complete the list with the infection control points of contact for those facilities.</p>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>3. Assess readiness of Ebola-designated facilities within the state</p> <p>i. Use CDC readiness assessment tool and</p>	October 1, 2015

<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	determine gaps in infection control ii. Address gaps (mitigate gaps) iii. Conduct follow-up assessments	
		<i>Other activities or descriptions:</i> Wyoming Medical Center and Cheyenne Regional Medical Center are the two Ebola-designated facilities in the state and CDC conducted readiness assessments on those facilities in September, 2015.	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	4. Assess outbreak reporting and response in healthcare facilities i. Use standard assessment tool and determine gaps in outbreak reporting and response ii. Address gaps (mitigate gaps) iii. Track HAI outbreak response and outcome	October 1, 2015
		<i>Other activities or descriptions:</i>	

Table 6: Targeted Healthcare Infection Prevention Programs

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1. Expand infection control assessments i. Expand assessments to other additional facilities and other healthcare settings and determine gaps in infection control ii. Address gaps (mitigate gaps) iii. Conduct follow-up assessments	October 1, 2015

		<i>Other activities or descriptions:</i>	
<input type="checkbox"/>	<input type="checkbox"/>	2. Increase infection control competency and practice in all healthcare settings through training	October 1, 2015
<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> i. Incorporate general infection control knowledge and practice assessments of competency into state licensing board requirements, credentialing, and continuing education requirements for clinical care providers (e.g., medical license, admitting privileges) and/or licensing/accreditation requirements for healthcare facilities. ii. Develop a sustainable training program based on CDC guidance and technical assistance to perform training, prioritizing on-site train-the-trainer programs in key domains of infection control, including the incorporation of hands on evaluations and competency assessments of best practices and a system to monitor ongoing compliance and competency. 	
		<i>Other activities or descriptions:</i>	
<input type="checkbox"/>	<input type="checkbox"/>	3. Enhance surveillance capacity to improve situational awareness, describe emerging threats, and target onsite assessments to implement prevention programs	October 1, 2015
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> i. Build capacity to analyze data reported by facilities in a defined region to allow for a comprehensive assessment of potential healthcare-associated infection threats, and communicate results with healthcare facilities. 	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ii. Work with CDC to guide analytic direction and identify facilities for prioritized assessments/response iii. Improve outbreak reporting capacity by developing an infrastructure that includes clear definitions of infectious threats of epidemiologic importance that are communicated to facilities 	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> iv. Implement a response plan to address potential emerging threats identified by using enhanced surveillance 	

	<i>Other activities or descriptions:</i>	
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Appendix 1

The HHS Action plan identifies metrics and 5-year national prevention targets. These metrics and prevention targets were developed by representatives from various federal agencies, the Healthcare Infection Control Practices Advisory Committee (HICPAC), professional and scientific organizations, researchers, and other stakeholders. The group of experts was charged with identifying potential targets and metrics for six categories of healthcare-associated infections:

- Central Line-associated Bloodstream Infections (CLABSI)
- Clostridium difficile Infections (CDI)
- Catheter-associated Urinary Tract Infections (CAUTI)
- Methicillin-resistant Staphylococcus aureus (MRSA) Infections
- Surgical Site Infections (SSI)
- Ventilator-associated Pneumonia (VAP)

Following the development of draft metrics as part of the HHS Action Plan in January 2009, HHS solicited comments from stakeholders for review.

Stakeholder feedback and revisions to the original draft Metrics

Comments on the initial draft metrics published as part of the HHS Action Plan in January 2009 were reviewed and incorporated into revised metrics. While comments ranged from high level strategic observations to technical measurement details, commenters encouraged established baselines, both at the national and local level, use of standardized definitions and methods, engagement with the National Quality Forum, raised concerns regarding the use of a national targets for payment or accreditation purposes and of the validity of proposed measures, and would like to have both a target rate and a percent reduction for all metrics. Furthermore, commenters emphasized the need for flexibility in the metrics, to accommodate advances in electronic reporting and information technology and for advances in prevention of HAIs, in particular ventilator-associated pneumonia.

To address comments received on the Action Plan Metrics and Targets, proposed metrics have been updated to include source of metric data, baselines, and which agency would coordinate the measure. To respond to the requests for percentage reduction in HAIs in addition to HAI rates, a new type of metric, the standardized infection ratio (SIR), is being proposed. Below is a detailed technical description of the SIR.

Below is a table of the revised metrics described in the HHS Action plan. Please select items or add additional items for state planning efforts.

Metric Number and Label	Original HAI Elimination Metric	HAI Comparison Metric	Measurement System	National Baseline Established (State Baselines Established)	National 5-Year Prevention Target	Coordinator of Measurement System	Is the metric NQF endorsed?
1. CLABSI 1	CLABSIs per 1000 device days by ICU and other locations	CLABSI SIR	CDC NHSN Device-Associated Module	2006-2008 (proposed 2009, in consultation with states)	Reduce the CLABSI SIR by at least 50% from baseline or to zero in ICU and other locations	CDC	Yes*
2. CLIP 1 (formerly CLABSI 4)	Central line bundle compliance	CLIP Adherence percentage	CDC NHSN CLIP in Device-Associated Module	2009 (proposed 2009, in consultation with states)	100% adherence with central line bundle	CDC	Yes†
3a. C diff 1	Case rate per patient days; administrative/discharge data for ICD-9 CM coded <i>Clostridium difficile</i> Infections	Hospitalizations with <i>C. difficile</i> per 1000 patient discharges	Hospital discharge data	2008 (proposed 2008, in consultation with states)	At least 30% reduction in hospitalizations with <i>C. difficile</i> per 1000 patient discharges	AHRQ	No
3b. C diff 2 (new)		<i>C. difficile</i> SIR	CDC NHSN MDRO/CDAD Module LabID‡	2009-2010	Reduce the facility-wide healthcare facility-onset <i>C. difficile</i> LabID event SIR by at least 30% from baseline or to zero	CDC	No
4. CAUTI 2	# of symptomatic UTI per 1,000 urinary catheter days	CAUTI SIR	CDC NHSN Device-Associated Module	2009 for ICUs and other locations 2009 for other hospital units (proposed 2009, in consultation with states)	Reduce the CAUTI SIR by at least 25% from baseline or to zero in ICU and other locations	CDC	Yes*

Metric Number and Label	Original HAI Elimination Metric	HAI Comparison Metric	Measurement System	National Baseline Established (State Baselines Established)	National 5-Year Prevention Target	Coordinator of Measurement System	Is the metric NQF endorsed?
5a. MRSA 1	Incidence rate (number per 100,000 persons) of invasive MRSA infections	MRSA Incidence rate	CDC EIP/ABCs	2007-2008 (for non-EIP states, MRSA metric to be developed in collaboration with EIP states)	At least a 50% reduction in incidence of healthcare-associated invasive MRSA infections	CDC	No
5b. MRSA 2 (new)		MRSA bacteremia SIR	CDC NHSN MDRO/CDAD Module LabID [‡]	2009-2010	Reduce the facility-wide healthcare facility-onset MRSA bacteremia LabID event SIR by at least 25% from baseline or to zero	CDC	No
6. SSI 1	Deep incision and organ space infection rates using NHSN definitions (SCIP procedures)	SSI SIR	CDC NHSN Procedure-Associated Module	2006-2008 (proposed 2009, in consultation with states)	Reduce the admission and readmission SSI [§] SIR by at least 25% from baseline or to zero	CDC	Yes [¶]
7. SCIP 1 (formerly SSI 2)	Adherence to SCIP/NQF infection process measures	SCIP Adherence percentage	CMS SCIP	To be determined by CMS	At least 95% adherence to process measures to prevent surgical site infections	CMS	Yes

* NHSN SIR metric is derived from NQF-endorsed metric data

[†] NHSN does not collect information on daily review of line necessity, which is part of the NQF

[‡] LabID, events reported through laboratory detection methods that produce proxy measures for infection surveillance

[§] Inclusion of SSI events detected on admission and readmission reduces potential bias introduced by variability in post-discharge surveillance efforts

[¶] The NQF-endorsed metric includes deep wound and organ space SSIs only which are included the target.

Understanding the Relationship between HAI Rate and SIR Comparison Metrics

The Original HAI Elimination Metrics listed above are very useful for performing evaluations. Several of these metrics are based on the science employed in the NHSN. For example, metric #1 (CLABSI 1) for CLABSI events measures the number of CLABSI events per 1000 device (central line) days by ICU and other locations. While national aggregate CLABSI data are published in the annual NHSN Reports these rates must be stratified by types of locations to be risk-adjusted. This scientifically sound risk-adjustment strategy creates a practical challenge to summarizing this information nationally, regionally or even for an individual healthcare facility. For instance, when comparing CLABSI rates, there may be quite a number of different types of locations for which a CLABSI rate could be reported. Given CLABSI rates among 15 different types of locations, one may observe many different combinations of patterns of temporal changes. This raises the need for a way to combine CLABSI rate data across location types.

A standardized infection ratio (SIR) is identical in concept to a standardized mortality ratio and can be used as an indirect standardization method for summarizing HAI experience across any number of stratified groups of data. To illustrate the method for calculating an SIR and understand how it could be used as an HAI comparison metric, the following example data are displayed below:

Risk Group Stratifier	Observed CLABSI Rates			NHSN CLABSI Rates for 2008 (Standard Population)		
Location Type	#CLABSI	#Central line-days	CLABSI rate*	#CLABSI	#Central line-days	CLABSI rate*
ICU	170	100,000	1.7	1200	600,000	2.0
WARD	58	58,000	1.0	600	400,000	1.5
$\text{SIR} = \frac{\text{observed}}{\text{expected}} = \frac{170 + 58}{100000 \times \left(\frac{2}{1000}\right) + 58,000 \times \left(\frac{1.5}{1000}\right)} = \frac{228}{200 + 87} = \frac{228}{287} = 0.79 \quad 95\% \text{CI} = (0.628, 0.989)$						

*defined as the number of CLABSIs per 1000 central line-days

In the table above, there are two strata to illustrate risk-adjustment by location type for which national data exist from NHSN. The SIR calculation is based on dividing the total number of observed CLABSI events by an “expected” number using the CLABSI rates from the standard population. This “expected” number is calculated by multiplying the national CLABSI rate from the standard population by the observed number of central line-days for each stratum

which can also be understood as a prediction or projection. If the observed data represented a follow-up period such as 2009 one would state that an SIR of 0.79 implies that there was a 21% reduction in CLABSIs overall for the nation, region or facility.

The SIR concept and calculation is completely based on the underlying CLABSI rate data that exist across a potentially large group of strata. Thus, the SIR provides a single metric for performing comparisons rather than attempting to perform multiple comparisons across many strata which makes the task cumbersome. Given the underlying CLABSI rate data, one retains the option to perform comparisons within a particular set of strata where observed rates may differ significantly from the standard populations. These types of more detailed comparisons could be very useful and necessary for identifying areas for more focused prevention efforts.

The National 5-year prevention target for metric #1 could be implemented using the concept of an SIR equal to 0.25 as the goal. That is, an SIR value based on the observed CLABSI rate data at the 5-year mark could be calculated using NHSN CLABSI rate data stratified by location type as the baseline to assess whether the 75% reduction goal was met. There are statistical methods that allow for calculation of confidence intervals, hypothesis testing and graphical presentation using this HAI summary comparison metric called the SIR.

The SIR concept and calculation can be applied equitably to other HAI metrics list above. This is especially true for HAI metrics for which national data are available and reasonably precise using a measurement system such as the NHSN. The SIR calculation methods differ in the risk group stratification only. To better understand metric #6 (SSI 1) see the following example data and SIR calculation:

Risk Group Stratifiers		Observed SSI Rates			NHSN SSI Rates for 2008 (Standard Population)		
Procedure Code	Risk Index Category	#SSI [†]	#procedures	SSI rate*	#SSI [†]	#procedures	SSI rate*
CBGB	1	315	12,600	2.5	2100	70,000	3.0
CBGB	2,3	210	7000	3.0	1000	20,000	5.0
HPRO	1	111	7400	1.5	1020	60,000	1.7
$\text{SIR} = \frac{\text{observed}}{\text{expected}} = \frac{315 + 210 + 111}{12600 \times \left(\frac{3.0}{100}\right) + 7000 \times \left(\frac{5.0}{100}\right) + 7400 \left(\frac{1.7}{100}\right)} = \frac{636}{378 + 350 + 125.8} = \frac{636}{853.8} = 0.74 \quad 95\% \text{CI} = (0.649, 0.851)$							

† SSI, surgical site infection

* defined as the number of deep incision or organ space SSIs per 100 procedures

This example uses SSI rate data stratified by procedure and risk index category. Nevertheless, an SIR can be calculated using the same calculation process as for CLABSI data except using different risk group stratifiers for these example data. The SIR for this set of observed data is 0.74 which indicates there's a 26% reduction in the number of SSI events based on the baseline NHSN SSI rates as representing the standard population. Once again, these data can reflect the national picture at the 5-year mark and the SIR can serve as metric that summarizes the SSI experience into a single comparison.

There are clear advantages to reporting and comparing a single number for prevention assessment. However, since the SIR calculations are based on standard HAI rates among individual risk groups there is the ability to perform more detailed comparisons within any individual risk group should the need arise. Furthermore, the process for determining the best risk-adjustment for any HAI rate data is flexible and always based on more detailed risk factor analyses that provide ample scientific rigor supporting any SIR calculations. The extent to which any HAI rate data can be risk-adjusted is obviously related to the detail and volume of data that exist in a given measurement system.

In addition to the simplicity of the SIR concept and the advantages listed above, it's important to note another benefit of using an SIR comparison metric for HAI data. If there was need at any level of aggregation (national, regional, facility-wide, etc.) to combine the SIR values across mutually-exclusive data one could do so. The below table demonstrates how the example data from the previous two metric settings could be summarized.

HAI Metric	Observed HAIs			Expected HAIs		
	#CLABSI	#SSI [†]	#Combined HAI	#CLABSI	#SSI [†]	#Combined HAI
CLABSI 1	228			287		
SSI 1		636			853.8	
Combined HAI			228 + 636 = 864			287+853.8 = 1140.8
$\text{SIR} = \frac{\text{observed}}{\text{expected}} = \frac{228 + 636}{287 + 853.8} = \frac{864}{1140.8} = 0.76 \quad 95\% \text{CI} = (0.673, 0.849)$						

† SSI (surgical site infection)