Template for State Healthcare-associated Infection Plan

In response to the increasing concerns about the public health impact of healthcare-associated infections (HAIs), the US Department of Health and Human Services (HHS) has developed an Action Plan to help prevent Healthcare-associated Infections. The HHS Action Plan includes recommendations for surveillance, research, communication, and metrics for measuring progress toward national goals. Three overarching priorities have been identified:

- Progress toward 5-year national prevention targets (e.g., 50-70% reduction in catheter associated bloodstream infections);
- Improve use and quality of the metrics and supporting systems needed to assess progress towards meeting the targets; and
- Prioritization and broad implementation of current evidence-based prevention recommendations

Background: The 2009 Omnibus bill required states who received Preventive Health and Health Services (PHHS) Block Grant funds to certify that they would submit a plan to reduce HAIs to the Secretary of Health and Human Services not later than January 1, 2010. In order to assist states in responding within the short timeline required by that language and to facilitate coordination with national HAI prevention efforts, the Centers for Disease Control and Prevention (CDC) created a template to assist state planning efforts.

This template helps to ensure progress toward national prevention targets as described in the HHS Action Plan. CDC is leading the implementation of recommendations on national prevention targets and metrics and states should tailor the plan to their state-specific needs.

Initial emphasis for HAI prevention focused on acute care, inpatient settings, and then expanded to outpatient settings. The public health model of population-based healthcare delivery places health departments in a unique and important role in this area, particularly given shifts in healthcare delivery from acute care settings to ambulatory and long term care settings. In non-hospital settings, infection control and oversight have been lacking which have resulted in outbreaks which can have a wide-ranging and substantial impact on affected communities. At the same time, trends toward mandatory reporting of HAIs from hospitals reflect increased demand for accountability from the public.

The State HAI Action Plan template targets the following areas:

1. Enhance HAI Program Infrastructure
2. Surveillance, Detection, Reporting, and Response
3. Prevention
4. Evaluation, Oversight, and Communication

With new Ebola-related, infection control activities, the following two tables have been added to reflect those activities:

5. Infection Control Assessment and Response (Ebola-associated activity from FOA Supplement, CK14-1401PPHFSUPP15, Project A)
6. Targeted Healthcare Infection Prevention Programs (Ebola-associated activity from FOA Supplement, CK14-1401PPHFSUPP15, Project B)

Framework and Funding for Prevention of HAIs

CDC's framework for the prevention of HAIs builds on a coordinated effort of federal, state, and partner organizations and is based on a collaborative public health approach that includes surveillance, outbreak response, infection control, research, training, education, and systematic implementation of prevention practices. Legislation in support of HAI prevention provides a unique opportunity to strengthen existing state capacity for prevention efforts.

Support for HAI prevention is being enhanced through the Epidemiology and Laboratory Capacity (ELC) Ebola Supplemental Grant. Congress authorized $126 million through the Public Health Services Act to; address priority domestic capacity building around Ebola and other emerging and highly-infectious diseases. This supplement provides additional resources to accelerate ELC activities around infection control assessment and response.

Nevada applied for $2,998,739 in supplemental funding to address HAI prevention efforts from 04/01/2015 through 03/31/2018, the total amount funded was $2,129,374.

The Nevada State Action plan

This 2015 revision of the original state plan will include tasks that have been implemented as well as those that are planned and in process of taking place. The Nevada State Action Plan provides HAI prevention activities in the six areas identified above. In the Plan you will find year one, year two and year three activities. This multi-year approach will allow Nevada to establish measurable goals and objectives culminating in a more comprehensive understanding of and response to HAI. This plan will be evaluated and subject to change, annually or as needed, based on the epidemiological environment.

This plan is a living document and will be evaluated and subject to change, annually or as needed, based on the epidemiological environment.

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. The areas selected for development or enhancement are listed below.

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 an HAI surveillance prevention and control program	
☒	☐	a. Collaborate with local and regional partners (e.g., state hospital associations, professional societies for infection control and healthcare epidemiology, academic organizations, laboratorians, networks of acute care hospitals and long term care facilities, long term acute care, skilled nursing centers, rehab facilities.	04/01/2015
☒	☐	b. 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.	10/01/2015
☒	☐	c. Engage HAI advisory committee in potential roles and activities to improve antibiotic use in the state (antibiotic stewardship).	
☐	☒	d. Engage HAI advisory committee in activities to increase health department's access to data and subsequently use those data in prevention efforts	
☒	☐	e. 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
		Activities or descriptions: *The following organizations have been invited to participate in the HAI Advisory Group:* • *Nevada Hospital Association (NHA)* • *Nevada Rural Hospital Partners* • *Southern Nevada Chapter of the Association for Professionals in Infection Control and Epidemiology (APIC)* • *Northern Nevada Infection Control (NNIC) network* • *Nevada Division of Public and Behavioral Health (DBPH)* • *Nevada State Epidemiologist* • *Washoe County Health District (WCHD)* • *Southern Nevada Health District (SNHD)* • *Carson City Health and Human Services (CCHHS)* • *DBPH Bureau of Health Care Quality and Compliance (*BHCQC) • *Quality Innovation Network/Quality Improvement Organization (QIN/QIO)* *The following will be invited to participate in future HAI state advisory meetings:* • *NV Board of Medical Examiners* • *NV Board of Osteopathy* • *NV Board of Nursing* • *NV Board of Podiatry* • *Nevada Medical Association* • *Nevada Nursing Association* • *Nevada schools of public health, medicine and nursing*	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Healthcare coalitions in the state of Nevada do not receive direct funding from the ASPR Hospital Preparedness Program. Public Health Preparedness (PHP) partners from the each of the four Local Health Authorities (LHAs) that receive ASPR funding were invited to participate. These PHP partners report back to and receive feedback from the coalitions	
☒ ☒	☐ ☐	2. Establish an HAI surveillance prevention and control program a. Designate a State HAI Prevention Coordinator b. 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) *Activities or descriptions:* *Since March 2009, the Nevada Division of Public and Behavioral Health (DPBH), formally Nevada State Health Division (NSHD), employs an Infection Preventionist Support Team for the purpose of providing education and consultation in infection prevention and control for all Nevada healthcare facility types regulated by Bureau of Healthcare Compliance Quality and Control (BHCQC). In addition, the Support Team provides support, education and consultation to BHCQC surveyors.* *DPBH currently employs three contractors through the ELC Ebola Supplemental Grant to assist with HAI activities throughout the project period.*	Complete Complete
☒	☐	3. Integrate laboratory activities with HAI surveillance, prevention, and control efforts. a. Improve laboratory capacity to confirm emerging resistance in HAI pathogens and perform typing where appropriate (e.g., outbreak investigation support, Health Language 7 interface (HL7) messaging of laboratory results)	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Activities or descriptions: *Following receipt of laboratory findings, the DPBH Office of Public Health Informatics and Epidemiology (OPHIE) and the State Epidemiologist are key to identifying, trending and analyzing laboratory results and other information related to Reportable Diseases. The BHCQC will be notified by the local or state health authority when the concern is related to one of the BHCQC facilities. Additional partners include CCHHS, WCHD and SNHD. Education and consultation are resources available through the Support Team.*	
☒	☐	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 Disease Control, state licensing boards) *Activities or descriptions:* *On October 1, 2009, **NRS 439.847,** the statute that set forth required reporting to the National Healthcare Safety Network (NHSN) became effective. Every facility subject to this reporting requirement was notified, by mail, and is mandated by this statute to grant DPBH access to their data by joining the DPBH group on the NHSN site. The OPHIE, HAI Division is responsible for all issues related to the NHSN. This statute was the product of collaborative efforts between the NHA, DPBH Administration, BHCQC, State Public Health Laboratory, APIC, NNIC network, and communicable disease programs within the county and state offices.* *DPBH will ensure that all facilities subject to this statute have joined the DPBH group within NHSN by December 31, 2015.*	Ongoing
☒	☐	*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	Initiated 02/2011 Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		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. *Activities or descriptions:* *The state currently uses NHSN as a standard base format by healthcare facilities for purposes of electronic reporting of HAI data.*	

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 Events 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) Bacteremia

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

- Surgical Site Infections (SSI)
- Ventilator-associated Events (VAE)

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.

Table 2: State planning for surveillance, detection, reporting, and response for HAIs

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	1. Improve HAI outbreak detection and investigation a. Work with partners including Council of State and Territorial Epidemiologist (CSTE), CDC, state legislatures, and providers across the healthcare continuum to improve outbreak reporting to state health departments	
☒	☐	b. Establish protocols and provide training for health department staff to investigate outbreaks, clusters, or unusual cases of HAIs.	
☒	☐	c. Develop mechanisms to protect facility/provider/patient identity when investigating incidents and potential outbreaks during the initial evaluation phase, where possible, to promote reporting of outbreaks.	
☒	☐	d. Improve overall use of surveillance data to identify and prevent HAI outbreaks or transmission in health care (HC) settings (e.g., hepatitis B, hepatitis C, multi-drug resistant organisms (MDRO), and other reportable HAIs)	
		Activities or descriptions:	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Data collected from OPHIE surveys will be used to better assist affected facilities during an outbreak. *During an outbreak, the Support Team will work with the HAI coordinator in assessing hospital and ASC surveillance programs. This will include interpretation of data to identify trends, clusters and outbreaks as well as identifying harmful breaks in technique or protocol. OPHIE is in the process of hiring an operation plan writer to develop the EPI disease and surveillance plan.* *Secure File Transfer Protocol (SFTP) is currently available for electronic reporting of outbreaks* *The HAI coordinator will work with the HAI Advisory Group to establish protocols and training opportunities for IPs and/or BHCQC staff to identify and/or investigate outbreaks, clusters or unusual cases of HAIs.*	Initiated August 2014 Ongoing Initiated 2014/ongoing 03/2016
☐	☒	2. Enhance laboratory capacity for state and local detection and response to new and emerging HAI issues. *Activities or descriptions:* *OPHIE will conduct a gap analysis to assess the need for PCR testing capability. Enhanced technology is critical for more accurate and efficient identification of microorganisms.* *OPHIE will develop a Qualtrics survey in an effort to determine if PCR educational campaign is needed.*	03/31/2016
☐	☐	3. Improve communication of HAI outbreaks and infection control breaches a. Develop standard reporting criteria including, number, size, and type of HAI outbreak for health departments and CDC	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐	☐	b. Utilize 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) *Activities or descriptions:* *Currently the OPHIE Outbreak Team utilizes the Interjurisdictional Notification Form (INF) to notify state and local governmental partners of outbreaks that have occurred. We also work with facilities experiencing an outbreak by providing education, personal assistance, onsite visits and analyzing data submitted on daily case reporting forms. The daily case reporting forms are used to collect outbreak data and formulate an epi curve as means to track the progression of the outbreak.*	
☐ ☐ ☐ ☐ ☐ ☐	☒ ☒ ☒ ☐ ☐ ☐	4. Identify at least 2 priority prevention targets for surveillance in support of the HHS HAI Action Plan a. Central Line-associated Bloodstream Infections (CLABSI) b. *Clostridium difficile* Infections (CDI) c. Catheter-associated Urinary Tract Infections (CAUTI) d. Methicillin-resistant Staphylococcus aureus (MRSA) Bacteremia e. Surgical Site Infections (SSI) f. Ventilator-associated Events (VAE)	07/2015
		5. Adopt national standards for data and technology to track HAIs (e.g., NHSN).	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒ ☒	☐ ☐	a. Develop metrics to measure progress towards national goals (align with targeted state goals). (See Appendix 1). b. Establish baseline measurements for prevention targets based upon available data. *Activities or descriptions:* *The State of Nevada has and will continue to follow national standards for data technology to track HAIs.*	Ongoing
☐	☒	6. Develop healthcare facility surveillance training as needed a. Conduct local training for appropriate use of surveillance systems (e.g., NHSN) including facility and group enrollment, data collection, management, and analysis *Activities or descriptions:* *In addition to the mandatory CDC online training that each NHSN facility will have to complete, the HAI Coordinator will arrange for optional web based or "train the trainer" or other appropriate training for all facilities required to utilize NHSN.*	06/2016
☒	☐	7. Develop tailored reports of data analyses for state or region prepared by state personnel *Activities or descriptions:* *In accordance with;* ***NRS 439.845 Analysis and reporting of trends regarding sentinel events; treatment of certain information regarding corrective action by medical facility.*** *1. The Division shall analyze and report trends regarding sentinel events.* *2. When the Division receives notice from a medical facility that the medical facility has taken corrective action to remedy the causes or contributing factors, or both, of a sentinel event, the Division shall:*	10/2015

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		(a) Make a record of the information; *(b) Ensure that the information is released in a manner so as not to reveal the identity of a specific patient, provider of health care or member of the staff of the facility; and* *(c) At least quarterly, report its findings regarding the analysis of trends of sentinel events on the Internet website maintained pursuant to NRS 439A.270.* *(Added to NRS by 2002 Special Session, 14; A 2009, 3069; 2011, 1800)* ***NAC 439.940 Participation in National Healthcare Safety Network: Annual report of aggregated data; confidentiality; audits.*** *1. The Division shall annually prepare and post on the Internet website maintained by the Division a report of aggregated data provided to the National Healthcare Safety Network.* *2. The Division may prepare and post on the Internet website maintained by the Division a report of the data provided by a specific medical facility or facility for skilled nursing, including, without limitation, infections tracked by the medical facility or facility for skilled nursing, infection rates reported by the medical facility or facility for skilled nursing and the name of the medical facility or facility for skilled nursing.* *3. The Division shall:* *(a) Ensure that the name and other personally identifying information regarding each patient are kept confidential when preparing the report.* *(b) Adhere to standard methods of suppressing protected health information and reporting to ensure that the identity of a patient is not revealed and to preserve patient confidentiality.* *4. The Division may, at such times as it deems necessary, audit a medical facility or a facility for skilled nursing that participates in the National Healthcare Safety Network to ensure the accuracy of information submitted by the medical facility or facility for skilled nursing, including, without limitation, data relating to facility-acquired infections, health care records and tests.*	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐ ☐ ☐ ☐ ☐ ☐	☒ ☒ ☒ ☒ ☒ ☒	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 a. Develop a validation plan b. Pilot test validation methods in a sample of healthcare facilities c. Modify validation plan and methods in accordance with findings from pilot project d. Implement validation plan and methods in all healthcare facilities participating in HAI surveillance e. Analyze and report validation findings f. Use validation findings to provide operational guidance for healthcare facilities that targets any data shortcomings detected *Activities or descriptions:* *This activity would be a full time job for a contract employee. At this time there is no funding identified to hire a contractor for this project. This will be reevaluated in year two and three of the grant period.*	Will be reevaluated in 04/2016
☒	☐	9. Develop preparedness plans for improved response to HAI a. Define processes and tiered response criteria to handle increased reports of serious infection control breaches (e.g., syringe reuse), suspect cases/clusters, and outbreaks *Activities or descriptions:* *OPHIE will work with local health departments, BHCQC, the Board of Medical Examiners, and other agencies as needed when cases of serious infection control breaches occur. OPHIE will use established Outbreak Policy to address outbreaks.*	03/2017

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	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 *Activities or descriptions:* *BHCQC currently engages professional licensing organizations as appropriate. In addition, the Support Team responds to surveyor findings and requests for Infection Prevention (IP) education, either from the healthcare facility or referral from surveyors. Surveyors investigate for IP complaints and involve the Support Team when appropriate. Analysis of surveyor findings as well as Support Team assessments is baseline for educational training.*	Ongoing
☐	☒	11. Adopt integration and interoperability standards for HAI information systems and data sources a. Improve overall use of surveillance data to identify and respond to 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. b. Promote definitional alignment of data element standardization needed to link HAI data across the nation. *Activities or descriptions:* *The State will encourage participation in mentoring program that has been established through the Southern Nevada APIC chapter and the Northern Nevada Infection Control network matching up newer IPs with experienced IPs.*	Ongoing
☒	☐	12. Enhance electronic reporting and information technology for healthcare facilities to reduce reporting burden and increase timeliness, efficiency, comprehensiveness, and reliability of the data a. Report HAI data to the public	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Activities or descriptions: *Nevada is required by law to report HAI data to NHSN. This information is compiled and posted in an open source forum on-line through the CDC.* *OPHIE has developed an outbreak step-by-step guide to ensure that accurate and reliable information is collected from the affected facility and disseminated to the proper agencies. The HAI task force will recommend that additional steps be incorporated to address release of data to the public when appropriate.* *In an instance where immediate dissemination of HAI data was appropriate, it would be coordinated through the DPBH Public Information Officer (PIO). This flow of information would be facilitated through press release, internet and print media.*	Initiated 03/2015
☐	☒	13. Make available risk-adjusted HAI data that enable state agencies to make comparisons between hospitals. *Activities or descriptions:* *This activity will be address with the completion of activity #7 under Surveillance, detection, reporting and response.*	10/2015
☒	☐	14. Enhance surveillance and detection of HAIs in nonhospital settings. *Activities or descriptions:* *The BHCQC surveyors continue their assessments of Infection Prevention and Control in all health care facility types regulated by the BHCQC. Surveyors make assessments during the usual survey processes that include observations, interviews and record reviews.*	Ongoing

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

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
☐	☒	1. Implement HICPAC recommendations a. Develop strategies for implementation of HICPAC recommendations for at least 2 prevention targets specified by the state multidisciplinary group. *Activities or descriptions:* *The Joint Commission (TJC) accredited organizations must already meet these criteria in addressing National Patient Safety Goal (NPSG) #7. Means will be developed to determine that these criteria are being maintained. The Epi support team will consult with the IPs in TJC accredited organizations and*	Ongoing 09/2016

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		facilities following other accreditation guidelines to determine how NPSG # 7 criteria are being maintained.	
☐	☒	2. Establish prevention working group under the state HAI advisory council to coordinate with state HAI collaboratives a. Assemble expertise to consult, advise, and coach inpatient healthcare facilities involved in HAI prevention collaboratives *Activities or descriptions:* *The HAI task force will provide consultation with collaboratives within the state of Nevada as they become available.*	Ongoing
☐ ☐ ☐	☒ ☒ ☒	3. Establish HAI collaboratives with at least 10 hospitals (this may require a multi-state or regional collaborative in low population density regions) a. Identify staff trained in project coordination, infection control, and collaborative coordination b. Develop a communication strategy to facilitate peer-to-peer learning and sharing of best practices c. Establish and adhere to feedback from standardized outcome data to track progress *Activities or descriptions:* *A prevention working group will be considered in the future, including a survey of Nevada facilities to see if there is an interest in experts coming together to form an HAI prevention collaborative* *Continue and further develop IPC mentoring- experienced IPs partnering with lesser experienced IPs. Hospitals, ASCs, LTACs, SNFs etc.* *Epi support team will coordinate with IPs to develop an IP quick reference guide.*	Start Date 04/01/2016
		4. Develop state HAI prevention training competencies	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	a. 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 *Activities or descriptions:* *OPHIE will develop competency and/or training tools utilizing resources provided by APIC and the CDC.* *The state hosts annual statewide HAI meetings with Nevada Antimicrobial Stewardship Program (NV-ASP) and Quality Innovation Network / Quality Improvement (QIN/QIO). We held our last HAI update on 8/3/15.*	12/2015
☒ ☒ ☒ ☒	☐ ☐ ☐ ☐	5. Implement strategies for compliance to promote adherence to HICPAC recommendations a. Consider developing statutory or regulatory standards for healthcare infection control and prevention or work with healthcare partners to establish best practices to ensure adherence b. Coordinate/liaise with regulation and oversight activities such as inpatient or outpatient facility licensing/accrediting bodies and professional licensing organizations to prevent HAIs c. Improve regulatory oversight of hospitals, enhance surveyor training and tools, and add sources and uses of infection control data d. 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 *Activities or descriptions:* *Nevada will use priority 1 module: recommendations for HAI prevention bundles: CLABSI, CAUTI and C. diff utilizing HICPAC and SHEA compendium; and/or consider current Centers for Medicare and Medicaid Services (CMS) and*	11/2016

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		TJC standards, CDC Multi-drug resistant organisms guidelines, and additional HICPAC recommendations as appropriate. *All Facilities providing procedures are strongly encouraged to be accredited by an accrediting organization (TJC, CMS, Accreditation Association for Ambulatory Health Care (AAAHC), etc.).*	
☐	☒	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) *Activities or descriptions:* *The state will maintain and enhance collaboration with healthcare coalitions (APIC, NNIC and Nevada Rural Hospital Partners, etc.).*	Ongoing
☐	☒	7. Establish collaborative(s) to prevent HAIs in nonhospital settings (e.g., long term care, dialysis) *Activities or descriptions:* *The Epi support team will collaborate with state partners as collaboratives for these facility types become available*	Ongoing

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
☐ ☐	☒ ☒	1. Conduct needs assessment and/or evaluation of the state HAI program to learn how to increase impact. a. Establish evaluation activity to measure progress toward targets and b. Establish systems for refining approaches based on data gathered *Activities or descriptions:* *The State is developing an assessment team following the CDC/ERA Team model. This State team will be a valuable tool to assist hospitals in Nevada to identify gaps and develop robust response policies and procedures.* *Other health care facility types will have an assessment conducted by the Epi support team utilizing the facility specific CDC assessment tool(s) that are currently being developed to identify and close gaps.* *A statewide survey will be conducted by the Epi support team with input from HAI advisory committee/working group.*	Start Date 10/31/2015 10/31/2015
		2. Develop and implement a communication plan about the state's HAI program and about progress to meet public and private stakeholders needs	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐	☒	a. Disseminate state priorities for HAI prevention to healthcare organizations, professional provider organizations, governmental agencies, non-profit public health organizations, and the public *Activities or descriptions:* *HAI coordinator will set future dates/communications for advisory group and separate working group to develop a communication plan.* *The communications plan developed by the HAI working group will focus on the dissemination of state priorities for HAI prevention utilizing various forms of media and through partner agencies.*	
☒	☐	3. Provide consumers access to useful healthcare quality measures a. Disseminate HAI data to the public *Activities or descriptions:* *Multiple reports currently available at:* *http://www.dpbh.nv.gov/ on the Nevada interactive data base site.* *HAI findings and sentinel events reports will be compiled annually by OPHIE.* *OPHIE will enhance DPBH HAI website for both professionals and the public.*	10/2015
☐	☒	4. Guide patient safety initiatives a. Identify priorities and provide input to partners to help guide patient safety initiatives and research aimed at reducing HAIs. *Activities or descriptions:*	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Priorities identified in the NV HAI plan will be provided to relevant partners throughout the state.	

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
☒	☐	1. Create an inventory of all healthcare settings in state. List must include at least one infection control point of contact at the facility *Activities or descriptions:* *Nevada utilizes the Federally mandated Resource's HAvBED, bed availability and tracking system to compile and track hospital information throughout the state. During the Ebola outbreak of 2014 the Public Health Preparedness (PHP) program made an effort to add IP contact information for each of the 39 Hospitals on the site.*	Competed by 11/30/2015

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		OPHIE will continue to work with PHP to complete and update the IP information as needed on the HAvBED site.	
☐	☒	2. Identify current regulatory/licensing oversight authorities for each healthcare facility and explore ways to expand oversight *Activities or descriptions:* *OPHIE will continue to maintain relationships with regulatory/licensing authorities throughout the state and explore the need for additional oversight if appropriate.*	Ongoing
☐ ☐ ☐	☒ ☒ ☒	3. Assess readiness of Ebola-designated facilities within the state a. Use CDC readiness assessment tool and determine gaps in infection control b. Address gaps (mitigate gaps) c. Conduct follow-up assessments *Activities or descriptions:* *The CDC/ERA team will help train the Nevada Assessment Team so that they can be better prepared to identify gaps during initial and follow-up assessments.* *The State Assessment Team will work with identified hospitals before, during and after the assessment process in their effort to develop robust sustainable response plans and policies.*	Start Date 10/20/2015
		4. Assess outbreak reporting and response in healthcare facilities	Start Date

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐ ☐ ☐	☒ ☒ ☒	a. Use standard assessment tool and determine gaps in outbreak reporting and response b. Address gaps (mitigate gaps) c. Track HAI outbreak response and outcome *Activities or descriptions:* *The Epi support team will utilize the outbreak assessment tool once it has been developed by CDC to characterize facilities capacities for HAI outbreak detection, reporting and response. Based on the data collected from the assessment tool, the HAI Task Force will work to develop training tools to address and close gaps in areas identified.*	3/1/2016

Table 6: Targeted Healthcare Infection Prevention Programs

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐ ☐ ☐	☒ ☒ ☒	1. Expand infection control assessments a. Expand assessments to other additional facilities and other healthcare settings and determine gaps in infection control b. Address gaps (mitigate gaps) c. Conduct follow-up assessments	Start Date 11/30/2015

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Activities or descriptions: *Other health care facility types will have an assessment conducted by the Epi support team utilizing the CDC assessment tool that is currently being developed to identify and close gaps.*	
☐ ☐	☒ ☒	2. Increase infection control competency and practice in all healthcare settings through training a. 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. b. 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. *Activities or descriptions:* *The HAI Advisory Group will develop an infection prevention and control competency examination. The competency examination will be presented to licensing/credentialing organizations for consideration for integration into the licensure process.* *The HAI Task Force will work to develop sustainable training programs. Based on resource availability and funding, incorporation of hands on evaluations and competency assessments of best practices and a system to monitor ongoing compliance and competency will be developed. Currently our Safe Injection Ambassador Training is a train the trainer program.*	Start Date 06/01/2016

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐ ☐ ☐	☒ ☒ ☒	3. Enhance surveillance capacity to improve situational awareness, describe emerging threats, and target onsite assessments to implement prevention programs a. 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. b. Work with CDC to guide analytic direction and identify facilities for prioritized assessments/response c. Improve outbreak reporting capacity by developing an infrastructure that includes clear definitions of infectious threats of epidemiologic importance that are communicated to facilities *Activities or descriptions:* *OPHIE will develop trainings on case definitions, surveillance capacity, and outbreak reporting.*	Start Date 04/01/2016

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-	2006-2008	Reduce the CLABSI SIR by at least 50% from baseline or to	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?
			Associated Module	(proposed 2009, in consultation with states)	zero in ICU and other locations		
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 *Clostridium difficile* Infections	Hospitalizations with *C. difficile* per 1000 patient discharges	Hospital discharge data	2008 (proposed 2008, in consultation with states)	At least 30% reduction in hospitalizations with *C. difficile* per 1000 patient discharges	AHRQ	No
3b. C diff 2 (new)		*C. difficile* SIR	CDC NHSN MDRO/CDAD Module LabID[‡]	2009-2010	Reduce the facility-wide healthcare facility-onset *C. difficile* 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

$$\text{SIR} = \frac{\text{observed}}{\text{expected}} = \frac{170+58}{100000\times\left(\frac{2}{1000}\right)+58{,}000\times\left(\frac{1.5}{1000}\right)} = \frac{228}{200+87} = \frac{228}{287} = 0.79 \qquad 95\%\text{CI} = (0.628, 0.989)$$

*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

$$\text{SIR} = \frac{\text{observed}}{\text{expected}} = \frac{315+210+111}{12600\times\left(\frac{3.0}{100}\right)+7000\times\left(\frac{5.0}{100}\right)+7400\left(\frac{1.7}{100}\right)} = \frac{636}{378+350+125.8} = \frac{636}{853.8} = 0.74$$ 95%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.

	Observed HAIs			**Expected HAIs**		
HAI Metric	**#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

$$\text{SIR} = \frac{\text{observed}}{\text{expected}} = \frac{228+636}{287+853.8} = \frac{864}{1140.8} = 0.76$$ 95%CI = (0.673,0.849)

† SSI (surgical site infection)