Alaska Healthcare Associated Infections Plan
December 28, 2009

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 Prevent Healthcare-Associated Infections (HHS Action Plan). The HHS Action Plan includes recommendations for surveillance, research, communication and metrics for measuring progress towards national goals. Three overarching priorities have been identified:

- Progress towards 5-year national prevention targets (e.g.,50-70% reduction in 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.

In a concurrent development, the 2009 Omnibus bill 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 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) has drafted a template to assist state planning efforts in the prevention of HAIs.

This template will help to ensure progress towards national prevention targets as described in the HHS Action Plan, wherein CDC is leading the implementation of recommendations on National Prevention Targets and Metrics and the implementation of priority prevention recommendations, while allowing flexibility to tailor the plan to each state's specific needs.

Initial emphasis for HAI prevention may focus on acute care, inpatient settings, yet the need for prevention activities for outpatient settings is recognized. State health departments are increasingly challenged by the needs to identify, respond to, and prevent HAI across the continuum of settings where healthcare is currently delivered. The public health model's population based perspective 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 the non-hospital setting, infection control and oversight have been lacking and outbreaks –which can have a wide-ranging and substantial impact on affected communities-, are increasingly reported. At the same time, trends toward mandatory reporting of HAIs from hospitals reflect increased demand for accountability from the public.

The current template targets the following areas:

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

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. The framework is based on a collaborative public health approach that includes surveillance, outbreak response, research, training and education, and systematic implementation of prevention practices. Recent legislation in support of HAI prevention provides a unique opportunity to strengthen existing and expand state capacity for prevention efforts.

Support for HAI prevention has been enhanced through the American Recovery and Reinvestment Act (ARRA). Congress allocated $40 million through CDC to support state health department efforts to prevent HAIs by enhancing state capacity for HAI prevention, leverage CDC's National Health Care Safety Network to assess progress and support the dissemination of HHS evidence-based practices within healthcare facilities, and pursue state-based collaborative implementation strategies. In addition, the Center for Medicaid Services (CMS) will support expansion of State Survey Agency inspection capability of Ambulatory Surgery Centers nationwide through $10 million of ARRA funds. This template is intended to support the high level of reporting and accountability required of ARRA recipients.

Template for developing HAI plan

The following template provides choices for developing or enhancing state HAI prevention activities in the four areas identified above. States can choose to target different levels of HAI prevention efforts indicated by checking appropriate boxes. (Level I indicates basic elements to begin HAI prevention efforts, Level II for intermediate and Level III more mature efforts). This can serve as the state's HAI plan for submission. If your state has an existing plan, you may choose to incorporate that plan into the template below or submit the existing plan in place of the template provided.

For each section, please choose elements which best support current activities or planned activities. Current activities are those in which the state is presently engaged and includes activities that are scheduled to begin using currently available resources. Planned

activities represent future directions the state would like to move in to meet currently unmet needs, contingent on available resources and competing priorities. A section for additional activities is included to accommodate plans beyond the principal categories.

1. Develop or 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.

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
Level I	☒ ☒	☐ ☐	1. Establish statewide HAI prevention leadership through the formation of multidisciplinary group or state HAI advisory council 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 (LTCFs)) ii. Identify specific HAI prevention targets consistent with HHS priorities	12/09/09
			Other activities or descriptions (not required): i. A multidisciplinary group designated as the Alaska Infection Control and Prevention Advisory Council (AK-ICPAC) was formed November 23, 2009. Participants invited to join AK-ICPAC : • Alaska State Hospital and Nursing Home Association (ASHNHA), • Alaska Midnight Sun Chapter, APIC (Association for	11/23/09

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			Professionals in Infection Control and Epidemiology), • Two practicing Infectious Disease Physicians, • Hospital Laboratory Supervisor, • Alaska Quality Improvement Organization (AK-QIO), • Past/current National Health and Safety Network (NHSN) member, • Non-NHSN hospital representative and a consumer of health care.	
			AK-ICPAC convened on 12/09/09. Accomplishments from this first meeting included: introduction of members and the organizations they represent, purpose of forming AK-ICPAC, brief discussion of the Alaska HAI Prevention Plan, selection of two HAI targets, date and agenda items for next meeting. Primary duties include identifying the best means of obtaining and using data to report and reduce healthcare associated infections. Additional members will be invited if needed.	12/09/09 and ongoing
			ii. On 12/9/09 AK-ICPAC met and selected 2 HAI prevention targets. The first HAI target was central line associated bloodstream infections to be monitored in adult critical care and house wide. The second HAI target selected was Methicillin Resistant *Staphylococcus aureus* (MRSA).	12/09/09 and ongoing
			2. Establish an HAI surveillance prevention and control program	
	☒	☐	i. Designate a State HAI Prevention Coordinator	11/16/09
	☐	☒	ii. Develop dedicated, trained HAI staff with at least	3/22/10

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			one FTE (or contracted equivalent) to oversee the four major HAI activity areas (Integration, Collaboration, and Capacity Building; Reporting, Detection, Response and Surveillance; Prevention; Evaluation, Oversight and Communication)	
			Other activities or descriptions (not required): i. The Alaska Department of Health and Social Services (DHSS), Section of Epidemiology (SOE) has a designated Healthcare Associated Infection Prevention Program Coordinator, Kim Spink, RN, BSN, CIC, to oversee the project. Kim's supervisor, Sue Anne Jenkerson, RN, MSN, FNP-BC, will serve as back-up for the coordinator position. The Coordinator is currently certified in infection control (CIC) and will maintain certification requirements. She is a member of APIC and has extensive experience in infectious disease surveillance, and outbreak investigation in a hospital setting. ii. Additional training will include: • NHSN training modules for data entry and validation, • NHSN training modules for the 2 chosen targets from AK-ICPAC, and • Attendance at the Fifth Decennial International Conference on Healthcare-Associated Infections 2010. The HAI Coordinator's supervisor is also involved in plan development and direction. She is a member of APIC, has extensive experience in public health infectious disease	11/16/09 3/22/10

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			surveillance, outbreak investigation, and professional training. The initial grant award covers approximately 50% of the personnel expenditures for the Alaska HAI Prevention Program Coordinator position. The other 50% of the position is funded for only one fiscal year by Preparedness funds. We strongly hope that future federal HAI funding will allow for 100% of this position to be dedicated to HAI prevention to continue the work of coordinating, expanding, and implementing statewide HAI Prevention Program activities.	
	☒	☐	3. Integrate laboratory activities with HAI surveillance, prevention and control efforts. 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)	Current and ongoing
			Other activities or descriptions (not required): i. Currently the Alaska State Public Health Laboratory (ASPHL) has capacity for culture identification and typing of: • *Haemophilus influenza* A, B, F • *Neisseria meningitides* Poly, A, B, C, Y • *Vibrio cholera* Poly, Ogawa, Inaba • *Salmonella spp.* • *Shigella spp.* • *E coli* O157 and soon non-O157 for shiga toxin producing *E coli* • *Methicillin Resistant Staphylococcus aureus (MRSA), specifically as requested for pulse field gel electrophoresis (PFGE) during a cluster or outbreak in a healthcare facility*	Current

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			ASPHL currently reports to SOE all positive results via ELR and has plans to convert to HL7 messaging in the future. ii. Additional laboratory services are provided by the Centers for Disease Control and Prevention, Arctic Investigations Program (CDC-AIP) for unusual clusters of infections or as part of an outbreak investigation. Resources are limited and therefore accepted on a case-by-case basis. Alaska SOE and CDC-AIP meet quarterly to discuss statewide surveillance of five reportable diseases: *Haemophilus influenza, Neisseria gonorrhea, Streptococcus agalactiae, Steptococcus pneumonia and Streptococcus pyogenes.* In addition, CDC-AIP is available to consult and conduct investigations of hospital outbreaks as needed. SOE and CDC-AIP verify reportable disease information on the above organisms annually for reporting consistency. iii Using the selected HAI prevention target of MRSA, recommended by AK-ICPAC , SOE will negotiate with hospital labs to establish surveillance and report MRSA either via ELR, National Health and Safety Network (NHSN) or manually. SOE will recommend that hospital labs use the National Health and Safety Network (NHSN) multi-drug resistant (MDRO) reporting definitions and methodology. Alaska currently has no statutes or regulations to require hospitals to use NHSN or report HAI to the public health department. SOE will partner with AK-ICPAC and the individual hospitals willing to implement HAI surveillance, prevention and control efforts for the selected targets.	8/02/2010 Current and ongoing

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			In addition to ASPHL, five other labs report to SOE via various ELR systems. SOE is in the process of developing standardized ELR reporting methodology to implement at these sites. We have purchased from a commercial vendor, Scientific Technologies Corporation, a new infectious disease database along with translation software (Diplomat) to translate current ELR files into HL7 messaging files. Previously planned expansion of ELR to ten or more hospitals will need to be phased in as resources and funding permits over the course of the next few years.	
Level II	☐	☐	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)	
	Alaska not funded for any Level II activities		*Other activities or descriptions (not required):*	
	☐	☐	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	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			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.	
			Other activities or descriptions (not required):	
Please also describe any additional activities, not listed above, that your state plans to undertake. Please include target dates for any new activities.				

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)

Work is ongoing to identify optimal metrics and targets for VAP infection. However, detection and measurement with existing tools and methods can be combined with recognized prevention practices in states where an opportunity exists to pursue prevention activities on that topic.

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. Please choose items to include in your plan at the planning levels desired.

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

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

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
Level I			1. Improve HAI outbreak detection and investigation	
	☐	☒	i. Work with partners including CSTE, CDC, state legislatures, and providers across the healthcare continuum to improve outbreak reporting to state health departments	Current and ongoing
	☐	☒	ii. Establish protocols and provide training for health department staff to investigate outbreaks, clusters or unusual cases of HAIs.	5/1/10 (ongoing)
	☐	☒	iii. 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	Review current state statutes by 12/10/10 and update as needed
	☐	☒	iv. 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)	9/30/10
			Other activities or descriptions (not required): i. SOE works closely with the Council of State and Territorial Epidemiologists (CSTE) and the Centers for Diseases Control and Prevention (CDC) to maintain regulations that reflect current reporting needs. For example, reporting regulations were	Ongoing

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			updated in January 2007 (http://www.epi.hss.state.ak.us/bulletins/docs/rr2007_01.pdf) to include several new diseases such as Group A streptococcus, Group B streptococcus, pneumococcal invasive disease, suspected novel strains of influenza, and prion diseases as well as expand other disease definitions (all *Vibrio* infections) to reflect current infectious disease epidemiology. Members of SOE routinely work with CSTE and attend the CSTE annual meeting to participate in surveillance and reporting discussions.	
			ii. After updating the reporting regulations, SOE published "Conditions Reportable to Public Health"(http://www.epi.hss.state.ak.us/pubs/conditions/ConditionsReportable.pdf), and distributed to all health care providers in Alaska. SOE members continue to include the topic of infectious disease surveillance in any public health presentation to health care providers. All reporting is by named data. SOE considers this information to be confidential medical data and thus protected by HIPAA. It is only shared as aggregate reports to the general public.	Ongoing
			iii. All SOE Epi Team members have taken the CDC/Emory course "Applied Epidemiology". Members have also trained other Department of Public Health (DPH) staff, such as the public health nurses and Department of Environmental Conservation (DEC) sanitarians in basic	3/18/10 and ongoing

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			epidemiology. We continue to train other agency staff (local public health department, Native Health Corporations), as well as hospital Infection Preventionists (IP) in order to maintain a proficiency in epidemiology outbreak investigation across the state. During the coming year we will focus training on surveillance for HAIs in hospitals, working with our local APIC chapter.	
			iv. SOE has an Epidemiology Procedure Manual, fondly called the "Midnight Madness Manual" (http://www.epi.hss.state.ak.us/pubs/EpiProcManual.pdf), which provides protocols for investigating reportable diseases. We will update this manual to include protocols and procedures to address investigations of HAI clusters/unusual cases.	Ongoing 9/1/2010
			v. The HAI coordinator is planning to attend the Fifth Decennial International Conference on Healthcare Associated Infections March 18-22, 2010. A session specific to outbreak investigations will be offered. The HAI Coordinator will utilize this information and the current APIC text to establish a basic protocol for SOE. This information can be incorporated into the updates to the "Midnight Madness Manual" for all SOE staff.	3/22/2010 9/1/2010
			vi. Alaska Administrative Code 7 AAC 27.005 Reporting by health care providers lists 56 infectious diseases reportable by healthcare providers, including	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			reporting of "unusual incidence of confirmed or suspected infectious disease or other condition of public importance". Any cluster of suspected HAI is reportable under current regulation. (http://www.epi.hss.state.ak.us/pubs/conditions/ConditionsReportable.pdf).	Current and ongoing
			vii. Alaska Statute allows DHSS access to health care records for identifying patients with certain infectious diseases, cancer, and birth defects. These statutes address the authorized use and security safeguards of identifiable health information and permitted disclosures (AS 18.05.042, AS 18.15.355, AS 18.15.360, AS 18.15.362, AS 18.15.365, AS 18.15.370). Although the statutes do not specifically include HAI reporting, they do give broad authority to the Department of Health and Social Services (DHHS) to prevent and control conditions of public health importance. Review and advice from the State Attorney General will be sought as needed to determine whether the existing state statutes and regulations adequately address disclosure and litigation concerns of hospitals who may be voluntarily reporting HAIs, including patient information, to the state.	03/1/2010
			viii. Currently four hospitals, a commercial lab and our state lab electronically report organisms of reportable infectious diseases directly to SOE. SOE has purchased new infectious disease reporting	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			software from STC. Named AK-STARS (Alaska Surveillance, Tracking and Reporting System), the new system will improve and eventually expand our existing electronic laboratory reporting. We have experienced problems with our current ELR system remaining operational and reliable. Hardware is old, worn out and does not meet current state security requirements. In addition, it is not totally electronic; staff must download, print and then manually enter the lab data into AK-STARS. SOE is working to improve daily operations for ELR data transmission from the hospitals to SOE in a secure, fully-automated HL7 environment. Our goals for 2010 are to expand participation of ELR to 8 hospitals (plus the commercial and state lab) for a total of 10 sites and improve the reliability and automation of the ELR system. An evaluation of the ELR system will be conducted to determine if the data from the hospitals are being accurately reported to the SOE either immediately for public health emergencies or within 5 days for all other diseases. ix. Alaska has a Hepatitis Program Coordinator who works as an SOE nurse epidemiologist and is part of the Epi Team responsible for surveillance and outbreak investigation. She routinely conducts weekly surveillance for hepatitis B and C, both of which are reportable. SOE has developed a hepatitis webpage http://www.epi.hss.state.ak.us/id/hepatitis/default.htm	9/30/10 Current and ongoing

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			for professionals and the general public. Alaska has essentially eliminated hepatitis A and B from the state with aggressive immunization programs over many years. Small clusters of either disease are recognizable and investigated. Hepatitis C is passively reported mostly via labs. Any possible cluster of hepatitis C is reportable by regulation and would be investigated by Epi Team staff. x. There are several limitations to implementing a statewide HAI surveillance and prevention program. The majority, 23 out of 24 hospitals, do not currently report HAIs to NHSN. Alaska has no mandatory reporting legislation. Most Alaskan hospitals are small, remote, generally understaffed with high turnover, and reached only by air travel. Most of Alaska is roadless. xi. With such limitations, any statewide HAI reporting effort would need to be voluntary (at least initially), utilize existing reporting mechanisms (ELR and AK-QIO reporting) and be responsive to the needs of the hospitals. Utilizing AK-ICPAC, we have identified of 2 HAI prevention targets, CLBSI and MRSA. Based on hospitals' willingness to voluntarily report, we will proceed with the implementation of ELR reporting and submission of CLBSI and MRSA infections to SOE. SOE will partner with the hospitals for analysis and publication of the data received. We will begin by providing the	Current and ongoing

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			data analysis to the participating hospitals before releasing any information publically. If we have no hospitals willing to voluntarily participate in this process, this information will be sent forward to our Chief Medical Director for further review and advisement regarding legislation of mandatory HAI reporting for our state.	7/1/2010 2/1/2011
	☐	☒	2. Enhance laboratory capacity for state and local detection and response to new and emerging HAI issues.	4/30/2010
			Other activities or descriptions (not required): i. ASPHL currently has the capability to conduct typing on the following organisms: • *Haemophilus influenza* A, B, F • *Neisseria meningitides* Poly, A, B, C, Y • *Vibrio cholera* Poly, Ogawa, Inaba • *Salmonella* (many different species) • *Shigella, E coli* 0157 and soon non-0157 for shiga toxin producing *E coli* • *Methicillin Resistant Staphylococcus aureus* (MRSA), specifically as requested for pulse field gel electrophoresis (PFGE) during a cluster or outbreak in a healthcare facility ii. We will discuss with ASPHL future plans for identifying and typing organisms related to HAIs such as Clostridium difficile, MRSA or other multi-drug resistant organisms (MDRO).	8/31/10

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			iii. SOE currently meets quarterly with the Centers for Disease Control and Prevention-Arctic Investigations Program (CDC-AIP) to discuss infectious disease surveillance. We annually validate our Infectious Disease database for the CDC-AIP organisms of interest (Group A streptococcus, Group B streptococcus, pneumococcal disease, *Neisseria meningitidis* and *Haemophilus influenza).* Additional laboratory services provided by the CDC-A IP include Pulse Field Gel Electrophoresis (PFGE) and Polymerase Chain Reaction (PCR) for unusual clusters of infection or suspected outbreaks caused by the above organisms, as well as, MRSA and Vancomycin Resistant Enteroccus (VRE). We will discuss our new HAI Prevention Program and possible CDC-AIP laboratory support and collaboration at a quarterly surveillance meeting.	3/31/10
			iv. SOE will begin with the MRSA HAI prevention target identified from AK-ICPAC to establish surveillance and reporting with our current hospitals using the AK-STARS electronic laboratory reporting (ELR) system. Expansion of ELR to ten or more labs will need to be phased in as resources and funding permits over the course of the next year.	12/09/09 and ongoing
			v. The Coordinator will collaborate with hospital Infection Preventionists and AK-ICPAC in developing the necessary steps to initiate reporting of the 2 selected HAI surveillance targets (CLBSI and	7/1/2010 and ongoing

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			MRSA). SOE will assist with the training and support of hospital partners in data collection, review, and conduct analysis (if needed) before targeted HAI rates are publically reported. vi. The initial grant award covers 50% of a FTE for the Coordinator position for approximately 28 months. It is our hope that future funding will allow for a 1.0 FTE dedicated to the HAI prevention program to assist Alaskan Hospitals in the process of surveillance, analysis and reporting of HAI. Currently, there is no such process in place and will require continued and adequate resources to fully implement. vii. Alaska does not have a state law to require HAI reporting; we will be dependent upon volunteers to work with us in developing this system or legislation will need to be enacted to mandate HAI reporting.	
Level II	☐ ☐	☐ ☐	3. Improve communication of HAI outbreaks and infection control breaches 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,	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			state licensing boards)	
	Alaska not currently funded for any Level II work		*Other activities or descriptions (not required):*	
	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐	4. Identify at least 2 priority prevention targets for surveillance in support of the HHS HAI Action Plan i. Central Line-associated Bloodstream Infections (CLABSI) ii. *Clostridium difficile* Infections (CDI) iii. Catheter-associated Urinary Tract Infections (CAUTI) iv. Methicillin-resistant Staphylococcus aureus (MRSA) Infections v. Surgical Site Infections (SSI) vi. Ventilator-associated Pneumonia (VAP)	
			Other activities or descriptions (not required):	
	☐ ☐	☐ ☐	5. Adopt national standards for data and technology to track HAIs (e.g., NHSN). i. Develop metrics to measure progress towards national goals (align with targeted state goals). (See Appendix 1). ii. Establish baseline measurements for prevention targets	
			Other activities or descriptions (not required):	
	☐	☐	6. Develop state surveillance training competencies i. Conduct local training for appropriate use	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			of surveillance systems (e.g., NHSN) including facility and group enrollment, data collection, management, and analysis	
			Other activities or descriptions (not required):	
	☐	☐	7. Develop tailored reports of data analyses for state or region prepared by state personnel	
			Other activities or descriptions (not required):	
Level III	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	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 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	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
	☐ ☐	☐ ☐	v. Analyze and report validation findings vi. Use validation findings to provide operational guidance for healthcare facilities that targets any data shortcomings detected	
			Other activities or descriptions (not required):	
	☐	☐	9. Develop preparedness plans for improved response to HAI 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	
			Other activities or descriptions (not required):	
	☐	☐	10. Collaborate with professional licensing organizations to identify and investigate complaints related to provider infection control practice in non-hospital settings, and to set standards for continuing education and training	
			Other activities or descriptions (not required):	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
	☐ ☐	☐ ☐	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.	
			Other activities or descriptions (not required):	
	☐	☐	12. Enhance electronic reporting and information technology for healthcare facilities to reduce reporting burden and increase timeliness, efficiency, comprehensiveness, and reliability of the data i. Report HAI data to the public	
			Other activities or descriptions (not required):	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
	☐	☐	13. Make available risk-adjusted HAI data that enables state agencies to make comparisons between hospitals.	
			Other activities or descriptions (not required):	
	☐	☐	14. Enhance surveillance and detection of HAIs in nonhospital settings	
			Other activities or descriptions (not required):	
Please also describe any additional activities, not listed above, that your state plans to undertake. Please include target dates for any new activities.				

3. Prevention

State implementation of HHS Healthcare Infection Control Practices Advisory Committee (HICPAC) recommendations is a critical step towards the elimination of HAIs. CDC with HICPAC has 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 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

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
Level I	☐	☒	1. Implement HICPAC recommendations. i. Develop strategies for implementation of HICPAC recommendations for at least 2 prevention targets specified by the state multidisciplinary group.	12/9/09
			Other activities or descriptions (not required): i. The AK-ICPAC meeting was conducted on 12/9/09 and 2 HAI prevention targets were identified: central line associated bloodstream infections (CLBSI) and Methicillin Resistant *Staphylococcus aureus* (MRSA). HICPAC (Healthcare Infection Control Advisory Committee) guidelines will be distributed to members for review and discussion at the next AK-ICPAC meeting January 14, 2010. ii. HAI Coordinator will use the existing list serve of Alaska Infection Preventionists and the local APIC chapter members to send information about the HAI	12/9/09 and ongoing 1/18/10

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			Prevention Program in general, the two HAI targets selected by AK-ICPAC and the corresponding HICPAC guidelines for those selected targets. iii. The HAI Coordinator will meet with the local APIC chapter to discuss the HAI Prevention Program and lead a discussion of the development of a collaborative process with APIC, Alaskan hospitals and other interested parties willing to participate. iv. Plan a one-day training session with the local APIC chapter to review and discuss strategies on how to reduce HAIs in general and how to begin reporting on the two selected targets. v. Alaska did not receive any initial grant funding for contracting with a vendor for HAI education. We hope the future funding will support Alaska statewide Infection Preventionist (IP) training on HAI prevention in general and NHSN HAI surveillance definitions, analysis and data reporting specifically.	2/22/10 5/31/2010
	☐	☒	2. Establish prevention working group under the state HAI advisory council to coordinate state HAI collaboratives i. Assemble expertise to consult, advise, and coach inpatient healthcare facilities involved in HAI prevention collaboratives	
			Other activities or descriptions (not required): i. A multidisciplinary Alaska State HAI Prevention Advisory Group (AK-ICPAC) convened on 12/09/09. Participants from the Alaska State Hospital and Nursing	12/9/09 first meeting and ongoing

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			Home Association (ASHNHA), local Midnight Sun chapter for APIC (Association for Professionals in Infection Control and Epidemiology), Infectious Disease Physician, Hospital Laboratory Supervisor, Mountain-Pacific Quality Health-Alaska (AK-QIO), past/current National Health and Safety Network (NHSN) member, non-NHSN hospital representative and a consumer of health care attended. Action items completed during this meeting were: member introduction, brief overview of HAI state grant and plan requirements, selection of 2 HAI preventation targets and schedule next meeting. Next meeting is scheduled January 14, 2010 at 11:00 AM. AK-ICPAC members will receive the Healthcare Infection Control Practices Advisory Committee (HICPAC) recommendations for the two selected HAI prevention targets. The Coordinator will discuss with AK-ICPAC the need for volunteers willing to work on prevention strategies and determine how this can best be accomplished.	
	☐ ☐ ☐	☒ ☒ ☒	3. Establish HAI collaboratives with at least 10 hospitals (i.e. this may require a multi-state or regional collaborative in low population 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 of a clear	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			and standardized outcome data to track progress	
			Other activities or descriptions (not required): i. SOE will conduct a needs assessment of Alaska Infection Preventionists (IP) to determine current staffing levels, resources and willingness to participate in HAI reporting. The results of the needs assessment will be shared with IPs with recommendations for "next steps" in establishing HAI reporting. ii. Alaska has 24 hospitals; the three largest hospitals are located in Anchorage, where half of the population resides. The other hospitals are smaller and located throughout Alaska in what are called "hub cities". These hub cities, mostly small rural communities themselves, provide health services for the surrounding villages. Any HAI reporting system will need to incorporate differences in the scope of health care services provided in a small rural setting versus a larger urban population. iii. The Coordinator will work with AK-ICPAC members, IPs, AK-QIO, ASHNHA, SOE, SOL (Section of Labs), Informatics Technicians involved with the expansion of ELR, and CDC-AIP to communicate objectives and progress being made on the Alaska HAI Prevention Plan. These efforts may include giving presentations, roundtable discussions at the statewide Alaska Health Summit, local APIC sponsored conferences and professional specialty meetings. Information related to the HAI Prevention Plan will be	4/30/10 5/30/10 and ongoing

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			posted on the SOE website and and we will write an Epidemiology Bulletin announcing the establishment of the Alaska HAI Prevention Program.	1/15/2010
			iv. Hospitals willing to voluntarily participate in surveillance, prevention and reporting of the selected HAI targets will receive:	
			• Upon request, information and contact numbers to enroll and report their HAI data in the National Health and Safety Network (NHSN),	1/14/10 and ongoing
			• Healthcare Infection Control Practices Advisory Committee (HICPAC) or other pertinent professional guidelines for the selected HAI targets at time of enrollment,	1/14/10 and ongoing
			• Review of data reported and received in the first week of enrollment with SOE. Reassessment will be conducted no less than every 2 weeks for the first month data is transmitted and subsequently monthly review for the first quarter.	9/30/10
			• Data analysis, per the Health and Human Services (HHS) and NHSN metrics, on a monthly basis and a review of the results with the hospital IP and/or their designated team.	12/30/10
			• Report of analyzed data/rates on a quarterly basis. Results shall be posted on the state website designated for HAI rates. SOE may consider reporting HAI rates every 6 months if dealing with small numerators and denominators that would not be statistically valid or could be misinterpreted by the public.	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
	☐	☒	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	
			Other activities or descriptions (not required): i. SOE will add training and certification questions as part of the initial needs assessment/survey to determine the extent of Alaska Infection Preventionists (IP) current status of training and certification needs. ii. Alaska does not have a mandate for HAI reporting and we have only one hospital that is currently participating in NHSN. AK-ICPAC and IP will assist SOE in determining a method to begin voluntary HAI target reporting. Options include: National Health and Safety Network (NHSN), Electronic Laboratory Reporting (ELR) or other resources that may be already in place and working in the hospital community. SOE would facilitate and partner with hospitals choosing to voluntarily report on the selected HAI targets. iii. Hospitals who choose to voluntarily work with the state on the HAI prevention targets will receive individual training and feedback from the Coordinator. iv. The AK-QIO is a certified trainer for NHSN and would be an excellent partner to assist with training the	4/30/10 First selected HAI target reporting by 10/01/10 Second HAI target reporting by 10/01/11

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			IP reporting data to NHSN. Initial funds were requested in the initial application to contract with AK-QIO to conduct NHSN training; however, no funds were received and training has not been scheduled to date. Pending future funding: • SOE will work with the AK-QIO to schedule NHSN training opportunities. The Coordinator, in conjunction with AK-ICPAC, will communicate dates, times and location of training. • SOE would also be interested in contracting with APIC to conduct training as part of their biannual statewide conference.	
Level II	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	5. Implement strategies for compliance to promote adherence to HICPAC recommendations 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, enhancing surveyor training and tools, and adding sources and uses of infection control data iv. Consider expanding regulation and oversight	

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
			activities to currently unregulated settings where healthcare is delivered or work with healthcare partners to establish best practices to ensure adherence	
	Alaska is not currently funded for any Level II activities		*Other activities or descriptions (not required):*	
	☐	☐	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)	
			Other activities or descriptions (not required):	
	☐	☐	7. Establish collaborative to prevent HAIs in nonhospital settings (e.g., long term care, dialysis)	
			Other activities or descriptions (not required):	
Please also describe any additional activities, not listed above, that your state plans to undertake. Please include target dates for any new activities.				

4. Evaluation and Communications

Program evaluation is an essential organizational practice in public health. Continuous evaluation and communication of practice 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 to occur. 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

Planning Level	Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
Level I	☐ ☐	☒ ☒	1. Conduct needs assessment and/or evaluation of the state HAI program to learn how to increase impact i. Establish evaluation activity to measure progress towards targets and ii. Establish systems for refining approaches based on data gathered	3/15/2010
			Other activities or descriptions (not required): i. The Coordinator will work with AK-ICPAC members, survey/needs assessment respondents, AK-QIO, ASHNHA, SOE, SOL (Section of Labs), Informatics Technicians involved with the expansion of ELR, and CDC-AIP to communicate objectives and progress being made on the Alaska HAI Prevention Plan. These efforts may include giving presentations, roundtable discussions at the statewide Alaska Health Summit, local APIC sponsored conferences and professional specialty meetings. Information related to the HAI Prevention Plan will be posted on our SOE website and Epidemiology Bulletin. ii. Hospitals willing to voluntarily participate in	4/30/10

		surveillance, prevention and reporting of the selected HAI targets will receive: • Upon request, information and contact numbers to enroll and report their HAI data, • Healthcare Infection Control Practices Advisory Committee (HICPAC) or other pertinent professional guidelines for the selected HAI targets at time of enrollment, • Develop a toolkit to assist IP understand the surveillance definitions, data collection tool and reporting of the HAI prevention targets selected (MRSA and CLBSI). • Provide basic training for the IP using the toolkit, NHSN definitions and metrics for the selected HAI prevention targets. • Pilot test the toolkit, data collection tool and reporting with one or more hospitals. Revise as needed. • Review of data reported and received in the first week of enrollment with reassessment no less than every 2 weeks for the first month data is transmitted and subsequently monthly review for the first quarter. • Data analysis, per the Health and Human Services (HHS) and NHSN metrics, on a monthly basis and a review of the results with the hospital IP and/or their designated team. • Report analyzed data/rates on a quarterly basis. Results shall be posted on the state website designated for HAI rates. SOE may consider reporting HAI rates every 6 months if dealing with small numerators and denominators that would not be statistically valid or could be misinterpreted by the public. • Develop a tool to evaluate accuracy and timeliness	2/30/10 5/30/10 6/30/10 7/30/10 9/30/10 First selected HAI target reporting by 10/01/10 Second HAI target reporting by 10/01/11

			of the MRSA HAI target reported after 6 months of data has been received. • Develop a tool to evaluate accuracy and timeliness of the CLBSI HAI target reported after 6 months of data has been received. • Overall program review and evaluation of selected HAI prevention targets by an outside source. Future funding of $4,000 would allow Alaska to contract with an expert reviewer to fully evaluate and report on the progress of the program. This report would be shared with the Medical Director, AK-ICPAC and posted on the SOE website. • Utilize guidelines for evaluating public health surveillance systems as published by the CDC [2]	4/30/11 4/30/12 4/30/13
	☐	☒	2. Develop and implement a communication plan about the state's HAI program and progress to meet public and private stakeholders needs i. Disseminate state priorities for HAI prevention to healthcare organizations, professional provider organizations, governmental agencies, non-profit public health organizations, and the public	2/10/2010
			Other activities or descriptions (not required): i. Under advisement from AK-ICPAC and in consultation with DHHS Public Information Office, we will: • Write a letter to inform hospital administrators	1/14/10 is the next AK-ICPAC meeting

[2] Centers for Disease Control & Prevention (CDC). Updated guidelines for evaluating public health surveillance systems: Recommendations from the guidelines working group. *Morbidity and Mortality Weekly Report*, (RR-13), 2001, 1-37.

			about the AK HAI State Plan and the importance of partnering with AK-ICPAC members for implementation and evaluation of progress. • Post the AK HAI Plan as a downloadable PDF file on the DHHS website. • Distribute the AK HAI Plan to each hospital administrator and IP. • Notify local media to share the AK HAI Plan release and how to obtain a copy both from the website and the SOE Office. • Disseminate information through the local APIC list serve. • Write an Epidemiology Bulletin announcing the establishment of the Alaska HAI Prevention Program and its goals.	12/28/09 1/15/10 1/30/10 2/10/10 1/30/10 2/15/10
Level II	☐	☐	3. Provide consumers access to useful healthcare quality measures	
	Alaska is not currently funded for any Level II activities		*Other activities or descriptions (not required):*	
Level III	☐	☐	4. Identify priorities and provide input to partners to help guide patient safety initiatives and research aimed at reducing HAIs	
			Other activities or descriptions (not required):	
Please also describe any additional activities, not listed above, that your state plans to undertake. Please include target dates for				

any new activities.

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.

To address concerns regarding validity, HHS is providing funding, utilizing Recovery Act of 2009 funds, to CDC to support states in validating NHSN-related measures and to support reporting on HHS metrics through NHSN. Also, most of the reporting metrics outlined here have already

been endorsed by NQF and for population-based national measures on MRSA and *C. difficile*, work to develop hospital level measures will be conducted in the next year utilizing HHS support to CDC through funds available in the Recovery Act.

Finally, to address concerns regarding flexibility in accommodating new measures, reviewing progress on current measures, and incorporating new sources of measure data (e.g., electronic data, administrative data) or new measures, HHS and its constituent agencies will commit to an annual review and update of the HHS Action Plan Targets and Metrics.

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 *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

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?
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[*]
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

$$\text{SIR} = \frac{\text{observed}}{\text{expected}} = \frac{315+210+111}{12600\times\left(\frac{3.0}{100}\right)+7000\times\left(\frac{5.0}{100}\right)+7400\left(\frac{1.7}{100}\right)} = \frac{636}{378+350+125.8} = \frac{636}{853.8} = 0.74 \qquad 95\%\text{CI} = (0.649, 0.851)$$

† 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.

	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

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

† SSI, surgical site infection