New Mexico Department of Health Healthcare-associated Infections Plan

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 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.

Template for developing HAI plan

The following template provides choices for enhancing state HAI prevention activities in the six areas identified above. 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. Enhance HAI program infrastructure

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

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

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	1. Establish statewide HAI prevention leadership through the formation of multidisciplinary group or state HAI advisory council 　　　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).	Established 2008 and ongoing
☒	☐	The NM Healthcare-associated Infections Advisory Committee (NM HAI AC) was formed in February 2008 at the direction of the New Mexico Department of Health (NMDOH) Secretary to conduct a pilot study for public reporting of HAIs. The NM HAI AC has included representatives from: 　a) Consumers 　b) New Mexico chapter of Association for Professionals in Infections Control and Epidemiology (APIC) 　c) NM Hospital Association (NMHA) 　d) NM hospitals (including large urban and smaller rural settings) 　e) Health Policy Commission (HPC) 　f) New Mexico Medical Review Association (NMMRA) 　g) Local representation of Society for Healthcare Epidemiology of America (SHEA) 　h) New Mexico Department of Health (NMDOH)	

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Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		ii. NEW: 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. The NM HAI AC engages in frequent review of projects and state needs to determine if the makeup of the membership needs modification. The NMDOH representation has included both the Epidemiology and Response Division and the Division of Health Improvement (the state licensing and survey agency) since inception. Additional expertise has been brought to committee discussions through work groups when laboratory or other expertise was especially critical. In 2015 the Committee reached out to the Hospital Preparedness ASPR-funded projects specifically in relation to potential participants who will assist in collaborations related to Ebola-related infection control activities.	2015
		iii. NEW: Engage HAI advisory committee in potential roles and activities to improve antibiotic use in the state (antibiotic stewardship) Advisory Committee member agencies have led and/or participated in stewardship activities in last three years. The NM HAI AC has plans to develop a plan in early 2016 reflective of the abilities of its partners to impact antimicrobial stewardship in the course of other 2016 – 2018 activities and to explore opportunities for specific focused activities.	Ongoing
		iv. NEW: Engage HAI advisory committee in activities to increase health department's access to data and subsequently use those data in prevention efforts	Ongoing

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Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	In spring 2016, NMDOH HAI program will present an overview of data available to NMDOH and NM HAI AC will develop plans to increase access as necessary and as possible. New Mexico has previously not been able to develop a data use agreement with NHSN allowing NMDOH access to all NM NHSN data, and has had to continue reliance on individual hospital-level permissions unless an HAI has been included under state notifiable conditions. v. Identify specific HAI prevention targets consistent with HHS priorities The NM HAI AC guided a pilot of HAI surveillance and reporting to the National Healthcare Safety Network (NHSN): six hospitals collected information in adult intensive care units (ICUs) on two indicators from July 1, 2008 - May 31, 2009. These were: 1) central line-associated bloodstream infections (CLABSIs) in adult ICUs; 2) influenza vaccination rates of healthcare personnel (HCP). During the interim years, indicators reported and facilities involved has grown so that in 2015, 34 of the 35 acute care hospitals reported CLABSIs and laboratory-identified *Clostridium-difficile* infections (CDI), as required under NM Administrative Code. Twenty-three hospitals voluntarily reported HCP influenza vaccination rates and laboratory-identified Methicillin-resistant *Staphylococcus aureus* (MRSA). All of this reporting to NMDOH is through the NHSN database with rights being conferred to NMDOH. NM HAI AC conducts periodic review of HHS targets and determines whether additional indicators should be reportable in NM and what prevention efforts are most critical to support and highlight. Those indicators may become reportable under Notifiable Conditions Code or may be voluntarily reportable under individual hospital reporting agreements. NHSN data which is accessible to NMDOH is included in an annual public report. These reports show NM aggregate and facility-specific data in relation to HHS targets.	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Other activities or descriptions:	
☒	☐	2. Establish an HAI surveillance prevention and control program i. Designate a State HAI Prevention Coordinator The NM HAI AC Facilitator, Joan Baumbach, is the NM HAI Prevention Coordinator. Joan Baumbach, MD, MPH, MS, is the Deputy Director of the Epidemiology and Response Division and has led NM HAI activities since, and including work for, the 2007 'House Joint Memorial 67 Task Force' to determine the feasibility of conducting surveillance for HAIs in NM.	In place
☒	☐	ii. Develop dedicated, trained HAI staff with at least one FTE (or contracted equivalent) to oversee HAI activities areas (Integration, Collaboration, and Capacity Building; Reporting, Detection, Response, and Surveillance; Prevention; Evaluation, Oversight, Communication, and Infection Control) An HAI Coordinator and full-time HAI Program Manager are in place. CDC ARRA funding initially supported one program manager, one medical epidemiologist, one nurse and one epidemiologist. In addition, a 0.5 FTE Infection Preventionist (IP) was working on the initiative as a contractor to NMDOH. Staffing dropped to 1.6 FTE in 2012 and is now at 3.6 FTE with funding approved for an addition FTE epidemiologist to be hired in early 2016 which will bring the team to 4.6 FTE. Two of these positions, focused on enhanced infection control practices and competency, are funded through Ebola-related resources.	In place

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Other activities or descriptions:	
☒	☐	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) The NM HAI Program communicates regularly with the large diagnostic clinical laboratories and the state public health laboratory to look for opportunities to integrate ongoing laboratory activities and to work toward improvement of laboratory capacity. The discussions involve keeping track of current projects and activities, such as electronic laboratory reporting, that could be leveraged for HAI surveillance, prevention, and control efforts. Resources have and will be pursued (when available) for additional activities (e.g., expanded antimicrobial sensitivity testing and expanded molecular typing capabilities such as pulsed-field gel electrophoresis [PFGE] for HAI pathogens). Particular advancements at the NMDOH Scientific Laboratory Division (SLD) have benefited HAI prevention, specifically molecular techniques (e.g., PFGE) that have helped confirm HAI outbreaks. Laboratory staffs are involved in work groups planning for new pathogen reporting (e.g., CRE) and in setting criteria for most effectively communicating individual results and identifying outbreaks and emerging infections.	Ongoing
		Other activities or descriptions:	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	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) In New Mexico, the state survey agency (i.e., Division of Health Improvement [DHI]) resides within NMDOH and contracts with the Centers for Medicaid and Medicare Services (CMS). DHI reviews complaints (from the public and healthcare provider community) that relate in any way to infections (among the total of approximately 3,600 calls received annually). DHI is a member of the NM HAI AC. In May 2015, NM HAI Program met with DHI to advance collaboration on information sharing both to further the development of a landscape tool and to assure continued sharing of healthcare facility complaints and deficiencies. Enhanced communication will further these collaborations. The NM HAI AC is interested in establishing communication with professional boards (e.g., nursing, medicine, pharmacy, osteopathy) to determine what reports they receive and on what level--if any--complaints potentially related to healthcare-associated infections can be shared.	Ongoing

		Other activities or descriptions:	
☒	☐	5. Facilitate use of standards-based formats (e.g., Clinical Document Architecture (CDA), electronic messages) by healthcare facilities for purposes of electronic reporting of HAI data. Providing technical assistance or other incentives for implementations of standards-based reporting can help develop capacity for HAI surveillance and other types of public health surveillance, such as for conditions deemed reportable to state and local health agencies using electronic laboratory reporting (ELR). Facilitating use of standards-based solutions for external reporting also can strengthen relationships between healthcare facilities and regional nodes of healthcare information, such as Regional Health Information Organizations. (RHIOs) and Health Information Exchanges (HIEs). These relationships, in turn, can yield broader benefits for public health by consolidating electronic reporting through regional nodes. NMDOH partners with New Mexico's Health Information Exchange (HIE), the New Mexico Health Information Collaborative (NMHIC), to allow them to serve as the primary agent for electronic notifiable condition data reporting in New Mexico. NMHIC HIE currently reports ELR notifiable conditions laboratory results data on behalf of 17 in-state hospital laboratories and 6 regional and national reference laboratories to NMDOH. Using NMHIC as the NMDOH agent for notifiable condition reporting, the following is expected: 1) streamlined outreach processes and bringing on additional reporters more quickly; 2) building on existing and future investments in HIE infrastructure; 3) reduced in-house resources necessary to establish electronic reporting. NMHIC will filter and standardize data streams from all hospitals, clinics and laboratories participating in the HIE. This filtered and standardized data will be stored in a data warehouse that NMDOH epidemiologists will be able to query and, when appropriate, will be transmitted to surveillance systems within NMDOH. Initially reporting will be established for emergency department visit and clinical laboratory report data. The system will be designed to allow for	Ongoing

| | | reporting of additional data, such as case report data, in the future. The NM HAI Prevention Coordinator is a member of the eReporting Steering Committee at NMDOH; this committee develops and approves deliverables as they relate to the above-mentioned working relationship with NMHIC. The NM HAI Prevention Coordinator acts as liaison for the NM HAI initiative with NMHIC.

NM HAI Program staffs have provided significant NHSN technical assistance since the 2008 pilot along with periodic quality reviews of the data and feedback to facilities. A web-based training by WHONET staff (the developers of a World Health Organization software for microbiology data) was provided on file development for upload to NHSN and a CDA pilot for uploading CDI data contributed to broadened awareness of NHSN among NMHIC and NMDOH data staffs. | |
| | | *Other activities or descriptions:* | |

2. Surveillance, Detection, Reporting, and Response

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

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

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

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

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[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

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	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 The NM HAI AC has ongoing working relationships with the Council of State and Territorial Epidemiologists (CSTE), Centers for Disease Control and Prevention (CDC), the New Mexico State Legislature (particularly the Health and Human Services Committee) including participation on or reporting to related committees, such as the national outbreak and response and standards committees. The NM HAI AC continues to look for opportunities to work on improved outbreak reporting to NMDOH.	Ongoing
☒	☐	ii. Establish protocols and provide training for health department staff to investigate outbreaks, clusters, or unusual cases of HAIs. Updated NMDOH Communicable Disease Manual sections related to select HAIs augment operations to address prevention and management approaches to HAIs including pathogen-specific guidance. On-line training opportunities are available for on-call epidemiologists specific to some HAI such as CDI. In addition, NMDOH has: a) encouraged reporting by facilities of potential cases, clusters and outbreaks that might need investigation; b) used validation activities to build detection tools; c) is studying other state tools/approaches for identification and investigation.	Ongoing
☒	☐	iii. Develop mechanisms to protect	Status remains the

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		facility/provider/patient identity when investigating incidents and potential outbreaks during the initial evaluation phase, where possible, to promote reporting of outbreaks The current mechanisms to protect facility/provider/patient identities are included in the Public Health Service Act (if the information is reported through the NHSN system), Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule provisions, and in New Mexico Statutory and Administrative Code Provisions. When NMDOH personnel (Infectious Disease Epidemiology Bureau [IDEB]) begin investigations of potential outbreaks in facilities monitored by the state survey agency within the Department (i.e., DHI), they inform DHI of the investigation in instances where the facility is not following IDEB recommendations and/or egregious practices are noted.	same; no policy changes planned
☒	☒	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) HAI staff (who sit within IDEB and also support on-call activities including outbreak identification, investigation, and remediation) review outbreak case forms to determine which outbreaks are HAI and whether trends exist in facility-type or condition that could lead to improved response. HAI outbreak numbers to date are small in NM. Surveillance data available through the IDEB on-call staffs are consistently used for identification and remedy of HAI outbreaks in various healthcare settings. When available, NHSN surveillance data has been used to confirm and/or inform those investigations. HAI staffs have also participated in resource	Ongoing and will be building through activities further described in Table 5

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		provision and technical assistance to healthcare facility staff for both remediation and prevention efforts to reduce future HAIs.	
		Other activities or descriptions:	
☒	☐	2. Enhance laboratory capacity for state and local detection and response to new and emerging HAI issues. New Mexico has pursued opportunities to enhance capacity at the NMDOH Scientific Laboratory Division (SLD)—the state public health laboratory— for example, to obtain funding to include antimicrobial susceptibility testing, expand molecular diagnostic capabilities, and other laboratory capacity as it relates to detection to emerging HAI issues although success has been elusive. The New Mexico HAI initiative works closely with the largest state-based clinical laboratory (i.e., TriCore) to understand its capacity as it relates to HAI issues and to actively involve them in building capacity within the state to detect and respond to HAI issues.	Ongoing
		Other activities or descriptions:	

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		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, state licensing boards)
			2015 and forward
			
			2015 and forward

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		New HAI staffs hired through ELC Ebola supplemental funding will provide staffs to support enhanced outbreak reporting, provision of guidelines on determining an HAI outbreak, and on coordinating information available from other state partners. Further detail is included in both Tables 5 and 6.	
		Other activities or descriptions:	
		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)	Ongoing
☒	☐	ii. *Clostridium difficile* Infections (CDI)	Ongoing
☐	☐	iii. Catheter-associated Urinary Tract Infections (CAUTI)	
☒	☐	iv. Methicillin-resistant Staphylococcus aureus (MRSA) Infections	Ongoing
☐	☐	v. Surgical Site Infections (SSI)	
☐	☐	vi. Ventilator-associated Pneumonia (VAP)	
		The NM HAI AC recommends which HAI indicators hospitals should be encouraged and/or required to focus on for surveillance, prevention, and state reporting. Hospitals confer rights to the data submitted to NHSN to staff at NMDOH for analysis and public reporting purposes. The NM HAI AC selected CLABSIs in ICU settings as the priority target for 2009-2010 reporting. CLABSIs were selected by the NM HAI AC after a number of potential indicators (including the Health and Human Services [HHS] proposed targets) were assessed applying specified criteria: consideration of impact on the NM population was a part of that assessment (e.g., burden, severity and cost of infections). Beginning in January 2010, and annually thereafter, the NM HAI AC has reviewed additional indicators to potentially be monitored and reported by participating healthcare facilities. Based on New Mexico legislation (Senate Bill 408 passed in 2008), the NM HAI AC is directed to consider additional	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		prevention targets for public reporting. The NM HAI AC aligns its goals and indicators with the HHS "Action Plan to Reduce Healthcare- Associated Infections" and associated metrics. The following factors are taken into consideration when reviewing potential indicators: • Recommendations by national consensus guidelines • Accurate and consistent definition for the indicator • Ability for data to be conveyed in consumer-friendly fashion • Availability of data for comparisons • Ability for indicator to be reviewed across continuum of healthcare services • Strength of evidence for methods to achieve effective reduction or elimination of the indicator • Endorsement of the indicator and prevention methods by groups such as National Quality Forum • Lack of redundancy with other forms of public reporting for the indicator or processes • Identified local need	
		Other activities or descriptions: Healthcare personnel (HCP) influenza vaccination rates were chosen in 2009 as a second prevention target related to HAIs that would allow all acute care facilities (and eventually non-acute care) to participate in the measure. HCP vaccination rates represented a potentially significant opportunity for improvement based on Joint Commission national goals of 43% seasonal vaccination for HCWs at that time. The 2014-2015 NM aggregate rate from 32 inpatient healthcare facilities was 82.4% which has been moving steadily toward the Healthy People 2020 goal of 90%.	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	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). NHSN was chosen as the preferred HAI reporting mechanism for NM during the HAI pilot project in 2008. Use of the SIR has been the consistent representation of progress for all indicators included in the NM public reporting for which NHSN is the data source. HCP influenza vaccination was reported as a percentage of HCP working in the facility during the influenza season from the first season report. Beginning with NMDOH involvement in the CDC HCP influenza vaccination reporting pilot, NM aligned with expanded HCP definitions as included in the final National Quality Forum measure for subsequent use in NHSN.	2008
☒	☐	ii. Establish baseline measurements for prevention targets While initially considering development of state baselines, NM HAI AC has consistently used NHSN established baselines and HHS prevention targets to provide nationally comparable progress statements both in public reporting and when working with facilities on prevention targets and surveillance.	Ongoing since 2010
		Other activities or descriptions:	
☒	☐	6. Develop state surveillance training competencies i. Conduct local training for appropriate use of surveillance systems (e.g., NHSN) including facility and	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		group enrollment, data collection, management, and analysis NMDOH provides NHSN trainings as an ongoing part of their work with hospitals. There are formal focused presentations or webinars (e.g., analysis, denominator data for LabID) and also facility-requested assistance as well as NMDOH staff identified issues indicating the need for refresher training. There is not an overall curriculum resulting in a certification of competency provided by the state.	
		Other activities or descriptions:	
☒	☐	7. Develop tailored reports of data analyses for state or region prepared by state personnel Per Senate Bill 408 "The advisory committee shall determine the content, format, venue and frequency of regular reports to the public. Public reports shall be published no later than July 1, 2011 and periodically thereafter." The NM HAI AC Public Reporting/Risk Communication Work Group has been instrumental in planning for and disseminating tailored reports, not only to the public and specific populations within the state, but also to other stakeholders (e.g., elected officials) and personnel within facilities involved in surveillance, prevention and control of HAIs. A public NM HAI Report is published annually.	Ongoing
		Other activities or descriptions:	

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	Ongoing
☒	☐	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 as feasible	
☒	☐	v. Analyze and report validation findings	
☒	☐	vi. Use validation findings to provide operational guidance for healthcare facilities that targets any data shortcomings detected NMDOH has participated in targeted NHSN data validation beginning in 2010. CLABSI validation was piloted in collaboration with CDC. Subsequently NMDOH has participated in application of CDC validation toolkits and provided feedback both on data accuracy findings and on toolkit processes. Validation has been done for CLABSI and LabID CDI and will be expanded to MRSA in 2016.	
		Other activities or descriptions:	
☒	☐	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	Ongoing

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Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		IDEB has demonstrated appropriate response capacity during response to state and nationally identified infection control breaches, including the 2012 fungal meningitis outbreak during which IDEB communicated with a number of NM providers that received shipments from the New England Compounding Center. The 2014 Ebola preparedness response to heightened concern about Ebola or Ebola-like illnesses presenting among travelers led to an expansive Ebola plan and tiered response capacity that has training and other components applicable to HAI suspect cases or outbreaks of similar or lesser concern. Working relationships between IDEB, Bureau of Health Emergency Management, and Bureau of Emergency Medical Services expanded during the Ebola response. The coordinated activities among these partners have created greater understanding of collaborative roles in a large scale outbreak response.	
		Other activities or descriptions:	
☐	☒	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 The HAI Program will work with DHI to review non-hospital setting complaints and visitation notes for indication of infection control violations and recommendations for improvement. Information gathered, especially if there is indication of trends within a specific facility or types of facilities, will be used to guide training development and discussions regarding training standards.	2016
		Other activities or descriptions:	

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	Ongoing
☒	☐	NM HAI Program reviews outbreak reports in IDEB periodically and to create annual HAI-related reporting to CDC. Though the HAI outbreak numbers are small, the HAI Program is working on a more automated format for capturing outbreaks and HC setting transmissions in order to more easily identify trends and patterns. NM-EDSS is one data source that is routinely and systematically analyzed for indications of potential outbreaks. ii. Promote definitional alignment and data element standardization needed to link HAI data across the nation. Data coming to IDEB through the electronic laboratory reporting of notifiable diseases is structured to meet national messaging criteria and definitional alignment. Hospital-based HAI data is all reported to NMDOH via NHSN using NHSN standard definitions.	Ongoing
		Other activities or descriptions:	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	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 The NM HAI AC and NMDOH selected NHSN as the HAI reporting mechanism in anticipation of broader use for NHSN developing. Reporting burden for facilities is decreased in that they are reporting their data once in response to CMS requirements and only need confer rights to NMDOH to allow ongoing NMDOH access to data. Due to standardized NHSN definitions, the public reporting from the NM HAI AC produces comparable, reliable data which is risk adjusted across states and across hospitals. Per Senate Bill 408 "The advisory committee shall determine the content, format, venue and frequency of regular reports to the public. Public reports shall be published no later than July 1, 2011 and periodically thereafter."	Ongoing
		Other activities or descriptions:	
☒	☐	13. Make available risk-adjusted HAI data that enable state agencies to make comparisons between hospitals. Due to the use of NHSN for reporting, all standardized infection ratios (SIR) calculated in NHSN automatically risk-adjust the HAI data. Hospitals do not have an SIR calculates in NHSN when their expected number of infections for the time period in question is less than one. The NM HAI Annual Report has	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		included hospital-specific SIR reporting since 2011.	
		Other activities or descriptions: .	
☒	☐	14. Enhance surveillance and detection of HAIs in nonhospital settings NM HAI AC members include some organizations and agencies who work on quality improvement with non-hospital healthcare facilities. Through their sensitization, education, and commitment from participation in the primarily hospital-focused initial activities, these members have expanded emphasis on HAI prevention beyond hospitals (e.g., hospital IPs overseeing infection control in affiliated outpatient settings, the NM QIO implementing long term care prevention initiatives). NMDOH was funded to lead across-the-spectrum-of-care CDI prevention work in a specific healthcare community in northwestern NM which included long term care, outpatient dialysis, and home health in training on surveillance, detection, and prevention. Similar approaches will be used in the expanded healthcare facility infection control assessments planned in 2016 and further described in Table 6.	Ongoing as resources are available
		Other activities or descriptions:	

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 　　　　i. Develop strategies for implementation of HICPAC recommendations for at least 2 prevention targets specified by the state multidisciplinary group. The NM HAI AC contracted with the state QIO to develop, coordinate and implement evidence-based HAI prevention initiatives. These initiatives aligned with the prevention targets selected by the NM HAI AC for data collection and reporting. Whenever possible, local collaborative efforts align and join with larger national initiatives to address similar practices. The NM HAI AC supports 'standards of care' related to HAI reduction that have been tested and refined during the collaborative learning experiences. Statewide prevention collaboratives on CLABSI and CDI, which incorporated HICPAC recommendations, have been completed.	Ongoing
		Other activities or descriptions:	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☒	☐	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 Steering committees are established for each collaborative and the AC functions as the work group for smaller initiatives as needed. The QIO Learning and Action Network (LAN) faculty group also functions as a resource and coaching group for statewide HAI prevention whether directly through the LAN or as part of an Hospital Engagement Network (HEN) or an NMDOH direct-led collaborative.	Ongoing
		Other activities or descriptions:	

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	☐
		3. Establish HAI collaboratives with at least 10 hospitals (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 from standardized outcome data to track progress
			Ongoing since 2010

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		The NM QIO had extensive experience and access to training and content experts to implement and support HAI collaboratives of this size during the NM HAI Program startup when there was sufficient funding for broad, and in-depth, surveillance and prevention training. HAI collaboratives have continued through QIO work under the CMS scope of work funding and have addressed HAIs within the CMS reporting criteria, including some not reportable to NMDOH. Peer-to-peer learning is enhanced through the relationships fostered in collaboratives and incorporated face-to-face sessions and is also synergistic with the energy created by the dynamic NM Association of Professionals in Infection Control and Epidemiology (APIC). Similar sharing and peer learning is spot-lighted in the quarterly NMDOH Reporting Group calls which focus on NHSN reporting and on facility-specific innovations and successes. Outcome data from most prevention initiatives has included standardized NHSN data but has also incorporated process data. In the latter cases, or others not using NHSN as the tracking mechanism, standard data collection tools are provided.	
		Other activities or descriptions:	
☒	☐	4. Develop state HAI prevention training competencies 　　i. Consider establishing requirements for education and training of healthcare professionals in HAI prevention (e.g., certification requirements, public education campaigns, and targeted provider education) or work with healthcare partners to establish best practices for training and certification	Ongoing in a limited scope

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		For infection control professionals (IP), Certification in Infection Control (CIC) is the most well-recognized and standard competency certification. NMDOH was able to provide one round of limited CIC testing scholarships for IPs. Within the CDI prevention across the spectrum of care initiative, there was also introductory training in infection control provided to infection control staffs from a variety of healthcare settings, many with no prior formal infection control prevention planning or surveillance training.	
		Other activities or descriptions:	
☐	☒	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 This strategy will be included in the 2016 conversations with licensing and regulatory agencies regarding capacity for incorporating competency.	Consideration in 2017
☒	☐	HICPAC resources are routinely provided to facilities during consultation, including potential outbreak investigations. ii. Coordinate/liaise with regulation and oversight activities such as inpatient or outpatient facility licensing/accrediting bodies and professional licensing organizations to prevent HAIs	Ongoing

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐	☒	iii. Improve regulatory oversight of hospitals, enhance surveyor training and tools, and add sources and uses of infection control data	2016
☐	☐	Work group discussions are planned in early 2016. iv. Consider expanding regulation and oversight activities to currently unregulated settings where healthcare is delivered and work with healthcare partners to establish best practices to ensure adherence	Future consideration based on activities above
		Other activities or descriptions:	
☐	☒	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) New Mexico is a largely rural state with 37 acute care non-governmental hospitals. Of these, 14 have greater than 100 beds (up to 450 beds), and 15 have fewer than 50 beds. There are an additional six critical access hospitals with fewer than 25 beds. The NM QIO currently has prevention activities open to all NM hospitals and is in the recruitment phase of their current work. Integrated approaches to hospital prevention continue to be supported by NM HAI AC and are the best way to attain the most progress from the state and federal resources available. Both NMDOH and the NM Hospital Association assist with hospital recruitment and support for this QIO work.	2016-2017
		Other activities or descriptions:	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐	☒	7. Establish collaborative(s) to prevent HAIs in nonhospital settings (e.g., long term care, dialysis) Similar to the large hospital collaborative goal mentioned above, the NM QIO provides collaborative improvement initiatives in long term care. As NMDOH expands out to infection control assessments in non-hospital settings the NM HAI AC will take the findings from those assessments to discuss recommendations for future prevention collaborative focus.	2017
		Other activities or descriptions:	

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
		    i. Establish evaluation activity to measure progress toward targets and
		    ii. Establish systems for refining approaches based on data gathered
		
		Progress toward HAI targets is discussed annually, at a minimum, by the NM HAI AC at the time of the Annual Report addressing the previous calendar year state aggregate SIRs and at any time a particular project or collaborative completes their work and reports outcomes to the NM HAI AC. HHS targets are used as the primary comparator.
		
		With the change in the NHSN baseline based on 2015 data the NM HAI AC will need to be prepared to talk about the change in baseline comparison and any modification in apparent progress.
			Ongoing

		Other activities or descriptions (not required):	

☒	☐	2. Develop and implement a communication plan about the state's HAI program and about 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 The NM HAI Annual Report is the primary medium for dissemination of these messages. Related press releases are also used. NM-based infection control and infectious disease conferences are used as opportunities for sharing of progress and challenges and to discuss state priorities.	Ongoing since 2011
		Other activities or descriptions:	
☒	☐	3. Provide consumers access to useful healthcare quality measures i. Disseminate HAI data to the public Following input from focus groups run in 2011, NMDOH began modifying public reports to include charts and representations that were identified as meaningful and of interest to consumers. In 2013 an infographic-type annual HAI report addendum was issued with a consumer focus. In 2014 and 2015 the NM HAI Annual Report was constructed to be more accessible to all, with supporting methodology documentation available on the internet along with facility-specific HAI data. Consumers are also informed of Hospital Compare as an additional source for facility-specific HAI data.	Ongoing since 2011
		Other activities or descriptions:	

☒	☐	4. Guide patient safety initiatives i. Identify priorities and provide input to partners to help guide patient safety initiatives and research aimed at reducing HAIs NM HAI AC guides patient safety initiatives through various partners, often in very informal ways due to the size of the state and strong existing relationships. Multiple interactions through groups including collaboratives, APIC, and the NMDOH Reporting Group, lead to awareness among IPs that prevention improvement and success are truly possible as well as necessary and expected. They are able to obtain direct access to the approaches and tools proven successful in other facilities and share in the benefits of applied best practices. The partners in the NM HAI AC look for opportunities to directly provide training and tools to facilities and to encourage focused research when feasible (e.g., through SHEA participants at national meetings and the NM Hospital Association input to the American Hospital Association research foundation). NMDOH has been involved in the CDC Emerging Infections Program HAI Community Interface projects since 2010. These EIP research projects address effective HAI surveillance and reporting as well as obtain HAI prevalence data. The combined access to evidenced-based methods along with surveillance and research data serve to support focused prevention and more efficient surveillance. NM HAI AC NMDOH has incorporated CLABSI and LabID CDI into the Notifiable Diseases and Conditions Code as one strong indicator of state priorities.	Ongoing
		Other activities or descriptions:	

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 each facility NMDOH HAI Program maintains a list of acute care hospitals reporting to NHSN and their primary, and often secondary, infection control contract. As of September 2015, 38 acute care facilities have conferred rights to NHSN data to NM. For all other healthcare facilities, IDEB is working closely with the NMDOH DHI to identify the existing inventories of healthcare settings in the state, as well as with other stakeholders who may have registries or data sets, to determine the most comprehensive mechanism for building and maintaining a healthcare settings inventory which can be expanded to incorporate key elements specific to infection control.	April 2015; target of December 31, 2015 for completion of version 1
☒	☐	2. Identify current regulatory/licensing oversight authorities for each healthcare facility and explore ways to expand oversight Following the above process, DHI, the QIO and the NM HAI AC will be the initial resources for addressing possible oversight authority for each healthcare facility type missing that information after the first version.	January 2016

		A focused work group is intended in early 2016 to address potential for expanded oversight once current oversight is more defined.	
☒	☒	3. Assess readiness of Ebola-designated facilities within the state i. Use CDC readiness assessment tool and determine gaps in infection control Potential Ebola assessment facilities have been identified in NM since late 2014. There was never a potential treatment facility in the state and it has been determined at both the state and national level that one is not needed. Initial assessments, using an early version of the CDC Ebola treatment center (ETC) checklist, were performed along with onsite or virtual walk-throughs of proposed patient care areas. With the completion of an updated hospital assessment checklist and improvement of the specificity for some expectations, follow up assessments are planned for NM final designated hospitals by December 31, 2015. As the first phase of these assessments, a CDC team is scheduled to visit two NM hospitals for Ebola readiness in November. All other designated assessment hospitals will receive reviews from NMDOH teams by December 31, 2015. These teams will consist of participants from the HAI Program, BHEM, and SLD.	April 1, 2015 Completion of potential assessment hospital surveys by December 31, 2015
☐	☒	ii. Address gaps (mitigate gaps) By using the CDC readiness assessment tools, gaps will be identified and mitigation plans developed. When possible, gaps will be mitigated in real time	Some gaps will be mitigated real time and others in collaboration post-survey
☐	☒	iii. Conduct follow-up assessments Follow up assessments will be performed to the degree required based on the number and degree of gaps identified and unaddressed at the time of the first visit.	Late 2016- early 2017

		Other activities or descriptions:	
☒	☐	4. Assess outbreak reporting and response in healthcare facilities 　　i. Use standard assessment tool and determine gaps in outbreak reporting and response NMDOH HAI Program will work with CDC and other partners to identify, or create, an outbreak reporting assessment tool to implement. Key information will be collected during outbreaks to assist in categorization of outbreaks and potential contributing factors. The HAI Epidemiologist will consult with the NM HAI AC & HAI Coordinator when developing infrastructure improvement strategies.	April 2015
☐	☒	ii. Address gaps (mitigate gaps) By using the newly created assessment tools, gaps will be identified and mitigated.	2016
☒	☒	iii. Track HAI outbreak response and outcome With improved outbreak reporting and support, facilities are anticipated to develop more effective response.	2016
		Other activities or descriptions:	

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	
☐	☒	i. Expand assessments to other additional facilities and other healthcare settings and determine gaps in infection control NMDOH is moving forward to hire a new epidemiologist to allow for the expansion of infection control assessments. In addition, NM HAI AC will work with the HAI Program to identify four healthcare referral systems in geographically diverse areas of NM in which to assess infection control in non-Ebola designated acute care hospitals and other facilities within their referral systems; such as rehabilitation hospitals, long term care, and dialysis as prioritized by the HAI action committee. This approach will provide opportunities for addressing infection transmissions across settings in the assessments.	February 2016
☐	☒	ii. Address gaps (mitigate gaps) Using CDC tools prepared for each type of healthcare facility, gaps will be identified and those not able to be mitigated real time will be addressed in a plan. Based on the gap findings, NM DOH will collaborate with the HAI AC to identify a group of assessment tools and mitigation resources for these facilities as well as for use in self-assessment by other facilities and/or for use by other professional organizations or consultants in ongoing quality improvement.	2017
☐	☒	iii. Conduct follow-up assessments	Late 2017

		Other activities or descriptions:
☐	☐	2. Increase infection control competency and practice in all healthcare settings through training i. Incorporate general infection control knowledge and practice assessments of competency into state licensing board requirements, credentialing, and continuing education requirements for clinical care providers (e.g., medical license, admitting privileges) and/or licensing/accreditation requirements for healthcare facilities.
☐	☐	ii. Develop a sustainable training program based on CDC guidance and technical assistance to perform training, prioritizing on-site train-the-trainer programs in key domains of infection control, including the incorporation of hands on evaluations and competency assessments of best practices and a system to monitor ongoing compliance and competency. Although the NM HAI AC and NMDOH support and engage in many activities to increase infection control competency and practice, these two specific activities are not in the current state plan. As the plan continues to evolve they will be considered as appropriate and as resources allow.
		Other activities or descriptions:
☐	☐	3. Enhance surveillance capacity to improve situational awareness, describe emerging threats, and target onsite assessments to implement prevention programs i. Build capacity to analyze data reported by facilities in a defined region to allow for a comprehensive assessment of potential healthcare-associated infection threats, and communicate results with healthcare facilities.
☐	☐	ii. Work with CDC to guide analytic direction and identify facilities for prioritized assessments/response
☐	☐	iii. Improve outbreak reporting capacity by developing an infrastructure that includes clear definitions of infectious

☐	☐	threats of epidemiologic importance that are communicated to facilities iv. Implement a response plan to address potential emerging threats identified by using enhanced surveillance While these activities are not addressed as a group in the current NM HAI Plan, many related aspects are present and are valued by NMDOH. The Ebola preparedness work of the past year and the planned enhanced healthcare facilities assessment over the next two years would both be components of these activities. The planned addition of carbapenem-resistant Enterobacteriaceae (CRE) to the NMDOH Notifiable Diseases or Conditions Code is an example where clear definitions of infectious threats and responses will need to be communicated to facilities in order for them to appropriately respond. Consideration of comprehensive incorporation of these components will be considered as the NM HAI AC moves forward with the state plan.	
		Other activities or descriptions:	

Appendix 1

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

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

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

Stakeholder feedback and revisions to the original draft Metrics

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

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

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

Metric Number and Label	Original HAI Elimination Metric	HAI Comparison Metric	Measurement System	National Baseline Established (State Baselines Established)	National 5-Year Prevention Target	Coordinator of Measurement System	Is the metric NQF endorsed?
1. CLABSI 1	CLABSIs per 1000 device days by ICU and other locations	CLABSI SIR	CDC NHSN Device-Associated Module	2006-2008 (proposed 2009, in consultation with states)	Reduce the CLABSI SIR by at least 50% from baseline or to zero in ICU and other locations	CDC	Yes[*]
2. CLIP 1 (formerly CLABSI 4)	Central line bundle compliance	CLIP Adherence percentage	CDC NHSN CLIP in Device-Associated Module	2009 (proposed 2009, in consultation with states)	100% adherence with central line bundle	CDC	Yes[†]
3a. C diff 1	Case rate per patient days; administrative/discharge data for ICD-9 CM coded *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

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

*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.

HAI Metric	Observed HAIs			Expected HAIs		
	#CLABSI	#SSI†	#Combined HAI	#CLABSI	#SSI†	#Combined HAI
CLABSI 1	228			287		
SSI 1		636			853.8	
Combined HAI			228 + 636 = 864			287+853.8 = 1140.8

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

†SSI (surgical site infection)