New Mexico Healthcare-associated Infections

2011 Report

Prepared by:

New Mexico Healthcare-associated Infections Advisory Committee

July 28, 2011

This document and further New Mexico healthcare-associated infection information can be found at www.nmhealth.org/HAI

A message from the New Mexico Secretary of Health

I would like to take this opportunity to recognize the collaborative work that has been accomplished in New Mexico to address healthcare-associated infections.

In a growing effort since 2007, healthcare professionals, facilities, associations and organizations have worked in partnership with the New Mexico Department of Health to improve health outcomes for New Mexicans. Starting with a core of six volunteer hospitals in 2008, there are now 38 facilities participating in one or more healthcare-associated infection surveillance and/or prevention activities.

My appreciation goes out to all of the healthcare facilities working together with the partners on the New Mexico Healthcare-associated Infections Advisory Committee in their ongoing efforts to monitor and prevent these infections as described in this report.

Sincerely,

Catherine D. Torres, M.D.
Cabinet Secretary

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Executive Summary

Healthcare-associated infections (HAI) are a leading cause of death in the US and are involved in an estimated 99,000 deaths each year. The direct medical costs associated with these infections were estimated to be $25,903 per infection in 2007 dollars. Growing public awareness has been instrumental in focusing increased attention to the problem of healthcare-associated infections. These infections are caused by a wide variety of common pathogens during the course of receiving medical care. These infectious agents can come from the patients themselves or from non-patient sources.

Many healthcare-associated infections are preventable through proven practices. They have been recognized by the Centers for Disease Control and Prevention as a top "winnable battle" in public health and as a priority for improving the quality of healthcare and patient safety. Since July 2008 New Mexico (NM) has responded to this challenge with an initiative to monitor and prevent healthcare-associated infections and a requirement to make its findings known to the public. This report, mandated by the Hospital-Acquired Infection Act, is the first to include data that is specific to healthcare facilities in NM.

The NM Healthcare-associated Infections Advisory Committee is led by the NM Department of Health and is comprised of stakeholders including consumers, the Association for Professionals in Infection Control and Epidemiology NM, the NM Hospital Association, NM hospitals, NM Medical Review Association (the state healthcare quality improvement organization), local representation from the Society for Hospital Epidemiology of America and the NM Department of Health. The Committee developed the NM Healthcare-associated Infections Prevention Plan that was submitted to the US Department of Health and Human Services January 1, 2010. The Plan provides guidelines for the surveillance and prevention of healthcare-associated infections, submission of data at state and national levels as well as public reports.

NM monitors central line-associated bloodstream infections because they can carry great risk to patients and also because hospitals can employ proven practices to prevent these infections. NM is also monitoring influenza vaccination rates of healthcare personnel. Healthcare personnel are a potential source of influenza to patients. However, they are not all are vaccinated each season as recommended. This poses a risk to their patients.

Six hospitals submitted healthcare-associated infections surveillance data to the Department of Health during a pilot program from July 1, 2008 through May 31, 2009. The pilot monitored central line-associated bloodstream infections in their adult intensive care units as well as influenza vaccinations of healthcare personnel in their facilities. The Advisory Committee has since expanded efforts to include more healthcare facilities and additional measures. Now there are 38 acute and long-term acute care facilities voluntarily participating in healthcare-associated infections monitoring and/or prevention activities in NM. These activities include: a) monitoring and prevention of central line-associated bloodstream infections in hospitals; b) influenza vaccination of healthcare personnel; c) monitoring and prevention of *Clostridium difficile* infection in healthcare settings; d) recent completion of a one-year central line-associated bloodstream infections prevention collaborative and beginning of a new *Clostridium difficile* infection prevention collaborative; and e) special research projects.

The NM Healthcare-associated Infections Initiative is beginning to monitor *Clostridium difficile* infection while also starting prevention activities. *Clostridium difficile* infection causes a range of outcomes from diarrhea to death and has been increasing in incidence and virulence over the past one to two decades. While it is too early to report results, 17 units in 11 NM healthcare facilities have begun to submit data and a prevention collaborative (*Clostridium difficile* Infection Prevention Project) involving healthcare providers, environmental services, pharmacy and laboratory personnel within facilities is underway. The *Clostridium difficile* Infection Prevention Project has set a goal to reduce *Clostridium difficile* infection by 30% over the next two years through a combination of measures outlined in this report.

The following is a summary of the key findings:

- The NM Healthcare-associated Infections Initiative has enabled a growing number of NM healthcare facilities to collaborate in surveillance and prevention of these infections.
- The evaluation of the data submitted by participating NM healthcare facilities indicates that there were fewer central line-associated bloodstream infections than national reference data would have predicted.
- Data submitted from the statewide total of 32 participating units (18 intensive care units and 14 non-intensive care units) showed that 61% fewer central line-associated bloodstream infections were observed than would have been predicted from national reference data.
    - The 18 participating intensive care units observed 59% fewer central line-associated bloodstream infections than predicted
    - The 14 non-intensive care units observed 70% fewer than predicted from national data.
- Only the outcomes from individual healthcare facilities that submitted data for central line-associated bloodstream infections from intensive care units for more than 12 months are included: all of these individual outcomes were better than or no different from national reference data.
- During the 2010-2011 influenza season, 60.4% of healthcare personnel were vaccinated among 24 NM healthcare facilities that voluntarily submitted data. This result is similar to national influenza vaccination coverage of healthcare personnel.

Development of safer and more accountable healthcare systems is a priority for national agencies such as the Centers for Medicare and Medicaid Services, Centers for Disease Control and Prevention, and Agency for Healthcare Research and Quality. Because of the above efforts in NM, there now exists not only a substantive body of data about this problem but also new collaborations through which healthcare-associated infections can be reduced.

The NM Healthcare-associated Infections Advisory Committee will continue to guide the collection of data, facilitate communication among partners and with the public as well as promote improvement of healthcare practices in NM.

Introduction

There is increasing public awareness and available information about patient safety issues which include healthcare-associated infections (HAI). The New Mexico (NM) Healthcare-associated Infections Advisory Committee, formed in 2008 and facilitated by the New Mexico Department of Health (NMDOH), has worked with an expanding number of healthcare facilities and personnel to identify and prevent HAI.

Starting with this report, the NM HAI Initiative is publicly reporting both New Mexico aggregate and facility-specific HAI data in a manner intended to be understandable and useful for the public. Since NM healthcare facilities vary in size and services, it is important that data are gathered and analyzed accurately and presented appropriately. The goal of this report is to bring residents of NM up to date on the work being done in the state to eliminate preventable HAI and to reduce patient harm. Public health work incorporates surveillance (including tracking disease) and prevention (including patient education and improving quality of healthcare). This report addresses these elements by informing the public about HAI in general, what the healthcare system is doing to prevent HAI and how the public can partner in their own care to minimize risks to their health. References and appendices are included for those who may want more detail or background. Additional information can also be found at http://www.nmhealth.org/hai.

Background

Healthcare-associated Infections

HAI are caused by a wide variety of common and unusual bacteria, fungi, viruses and toxins encountered during the course of receiving medical care. These infectious agents can come from the patient themselves such as from their skin, nose, mouth, gastrointestinal tract or vagina where microorganisms are normally found or from non-patient sources such as healthcare personnel, visitors, patient care equipment, medical devices or the healthcare environment.

Medical advances have brought lifesaving care to patients in need, yet many of these advances come with a risk of HAI. HAI can be viewed as one of the top ten leading causes of death in the United States (US) and account for an estimated 1.7 million infections and 99,000 associated deaths each year.[1] The direct medical cost associated with these infections was estimated, in 2007 dollars, to be $25,903 per HAI.[2]

Surveillance for HAI is conducted to monitor successes in HAI prevention and control. Public health surveillance is the ongoing, systematic collection, analysis and interpretation of health data essential to the planning, implementation and evaluation of public health practice, and is closely integrated with the timely dissemination of these data to those responsible for prevention and control.

Monitoring and preventing HAI are areas of focus around the world, including throughout the US. The World Health Organization (WHO) has been involved in multiple studies and prevention efforts and national surveillance systems have been developed in several countries.

A recent indicator of the US commitment to reducing HAI is the April 2011 announcement of the Partnership for Patients. The Partnership for Patients is a new

public-private partnership to improve the quality, safety and affordability of healthcare for all Americans. The US Department of Health and Human Services (HHS) will work with a wide variety of public and private partners to achieve the two core goals of this partnership: keeping patients from getting injured or sicker while in the healthcare system; and helping patients heal without complication by improving transitions from acute care hospitals to other care settings, such as home or a skilled nursing facility.

National Activities

Surveillance Efforts

As national focus on HAI increases, surveillance becomes key to further defining the magnitude of the problem, understanding trends, and monitoring progress in reducing and eliminating these infections. Significant progress is being made in the US toward nationwide HAI surveillance through the cooperation of federal regulatory agencies, state health departments, healthcare stakeholders, and an informed and active public.

In 2010, Centers for Medicare and Medicaid Services (CMS) took a major step in recognizing the importance of surveillance and prevention of HAI for reduction of healthcare costs. They released a final rule (CMS 1498) July 30, 2010 under the Hospital Inpatient Prospective Payment Systems to provide financial incentives for HAI data submission to CMS. In order to earn full reimbursement for patient care, hospitals that care for Medicare patients must submit data on central line-associated bloodstream infections (CLABSI) that occur in intensive care units (ICUs) beginning January 1, 2011. CMS will release this information, and subsequent HAI information, to consumers on the Hospital Compare website and also will use these data to determine part of the hospitals' reimbursement beginning fiscal year 2013. Surgical site infection (SSI) data submission is proposed for inclusion in this plan beginning January 1, 2012. CMS plans to add HAI indicators to this system annually.

The mechanism supported by Centers for Disease Control and Prevention (CDC) for collection of data on HAI is the National Healthcare Safety Network (NHSN), a secure web-based electronic data repository. NHSN enables healthcare facilities to collect and use HAI surveillance data. This system includes the following advantages: 1) use of standardized definitions for all HAI; 2) built-in analytic tools; 3) user training and support; 4) ability to benchmark HAI rates specific to facility and unit type; and 5) built-in data quality checks. As of early 2011, CDC had enrolled over 4000 healthcare facilities in NHSN and that number continues to rise. NHSN is being used by states with mandatory HAI reporting, those with voluntary HAI data submission policies, such as NM, and also as the mechanism to submit HAI data to CMS. Availability of this electronic system eliminates the need for individual states to design and support their own systems.

According to a January 2011 report by the Association of State and Territorial Health Officials (ASTHO) and CDC, 32 states and the District of Columbia have enacted laws pertaining to HAI prevention and reporting. Of the states with HAI laws, only two (Arkansas and New Mexico) allow for voluntary submission of HAI data. The remaining 30 states have mandatory HAI data submission requirements.[3]

In May of 2010, CDC Division of Healthcare Quality and Promotion (DHQP) published the "First State-specific Healthcare-associated Infections Summary Data Report."[4] This report included CLABSI data for January through June 2009 submitted by healthcare facilities to NHSN in states with mandatory CLABSI reporting. The report included a

national standardized infection ratio (SIR) calculation that showed an 18% national decrease in CLABSI during the first six months of 2009 compared to the previous three years.

In March of 2011, DHQP published the subsequent national "Healthcare-associated Infections Standardized Infection Ratio Report for July through December 2009."[5] This report included data submitted to NHSN by facilities in states with mandatory CLABSI and/ or SSI data submission. NM state-specific data were not included because of the voluntary reporting status in the state. The national SIR data, which included all non-neonatal ICUs reporting CLABSI data to NHSN continuously during 2009, was included in this report. There was no change in SIR from July – December 2009 compared to January – June 2009.

These CDC DHQP reports presented state-specific data from 18 states with mandatory CLABSI data submission and compared them to overall national data. The SIR (Appendix E) was used to compare the state-specific data with the overall national data. The SIR represents the observed number of infections divided by the expected number of infections. The expected data was based on NSHN CLABSI data reported during 2006 – 2008 from all participating US hospitals (national reference population).

These CDC DHQP reports provide a national baseline measurement to guide state prevention activities to fulfill the HHS Action Plan to Prevent Healthcare-associated Infections.[6] The Action Plan includes a five-year goal to reduce CLABSI by 50%, as well as reduction goals for four additional HAI. Data from NHSN, the same data used for these reports, can also help identify institutional problems and are used to monitor infection rates over time to help evaluate implementation of best infection prevention practices and innovative approaches.

Prevention Efforts

Surveillance data is most effective when it is used to drive prevention efforts and focus application of best practice measures. A number of national efforts, some governmental and some private, are creating structures for implementing broad-based and infection-specific HAI prevention initiatives. Best practice measure implementation has been shown to reduce, and even eliminate some preventable HAI.

US HHS Action Plan

In 2009 the US HHS unveiled the above-mentioned HHS Action Plan that established a set of five-year national prevention targets to reduce, and possibly eliminate, five specific HAI.

In late September 2010, The US HHS Steering Committee for the Prevention of Healthcare-Associated Infections hosted the meeting "Progress Toward Eliminating Healthcare-Associated Infections". The purpose of the meeting was to review progress toward achieving the five-year targets in the HHS Action Plan to Prevent Healthcare-Associated Infections by increasing adherence to specific recommended prevention practices and reducing the incidence of specific HAI.

A summary of the progress through September 2010 shows:

- Marked improvement in infection rates for CLABSI, healthcare-associated invasive methicillin-resistant *Staphylococcus aureus* (MRSA) infections, and SSIs, all of which constitute timely progress toward the five-year targets

- Improvement in compliance with all five Surgical Care Improvement Project (SCIP) process measures to reduce the risk of surgical site infections

For other measures, such as healthcare facility onset of *Clostridium difficile* infection (CDI) and catheter-associated urinary tract infections (CAUTI), baseline data has been collected and are being analyzed.

Comprehensive Unit-based Safety Program

A prime prevention example is the Comprehensive Unit-based Safety Program (CUSP), a collaborative effort that started among the Johns Hopkins University Quality and Safety Research Group, the Health Research and Educational Trust and the Michigan Health and Hospital Association Keystone Center for Patient Safety and Quality. CUSP used a comprehensive approach that included: promoting a culture of patient safety; improving communication among ICU staff teams; and using a checklist to promote implementation of practices based on guidelines from CDC.

The primary CUSP goals are to: 1) eliminate or reduce CLABSI rates to no more than one infection per 1,000 catheter days at the end of two years; and 2) to improve and strengthen the overall safety culture on hospital units. CDC continues to support the nationwide implementation of CUSP. At last report, there were active CUSP projects in 43 states, including New Mexico.

State and Hospital Level HAI Prevention Efforts

A complementary approach to CUSP being used by many states, including NM, is the formation of learning collaboratives. Collaboratives bring together professionals in settings where members interact by sharing experiences and knowledge to search for comprehension, significance and solutions. HAI prevention collaboratives focus on identification and implementation of best practices, including sharing of technical knowledge and processes, related to a specific HAI indicator. While specific HAI prevention outcomes can be difficult to quantify, anecdotal evidence from learning collaboratives shows that this particular strategy provides professional development and networking opportunities and further builds momentum toward overcoming barriers to HAI prevention.

A number of hospitals in New Mexico have broad quality improvement programs that address hospital culture, patient safety, continuous staff training and monitoring of outcomes. An example, implemented by several of these hospitals, is Six Sigma, a business management strategy to improve quality by identifying and removing the causes of errors and minimizing variability in processes.

National Impact of Prevention

Evidence-based interventions, such as CUSP, have been successful in preventing and reducing HAI. According to the March 2011 issue of CDC Vitalsigns, "… new data show that 58% fewer bloodstream infections occurred in hospital ICU patients with central lines in 2009 than in 2001." This fact sheet goes on to state that "Overall, the decrease in infections saved up to 27,000 lives …" and "In 2009 alone, reducing infections saved about 3,000-6,000 lives and about $414 million in extra medical costs compared with 2001."

New Mexico Healthcare-associated Infections Program

History

A task force charged with studying the feasibility of conducting surveillance for HAI in NM was formed under House Joint Memorial 67 in 2007. The NM HAI Advisory Committee formed in 2008 at the direction of the Secretary of NMDOH to implement a voluntary HAI surveillance pilot. The pilot included six hospitals conducting surveillance for two HAI indicators from July 1, 2008 through May 31, 2009. The full pilot report can be found at: http://nmhealth.org/hai/documents/HAIPilotReport_Final_August2009a.pdf

In 2009 The Hospital-Acquired Infection Act, NMSA §§ 24-29-1 to 24-29-6 (2009) was enacted which formalized the NM HAI Advisory Committee and its role, while keeping HAI data submission voluntary. The Committee is facilitated by NMDOH and is currently working toward its goals related to public reporting and prevention of HAI. NMDOH was awarded American Recovery and Reinvestment Act of 2009 (ARRA) funds for surveillance and prevention of HAI. These funds allowed for development of a comprehensive HAI program. The resulting NM HAI Prevention Plan, submitted to the US HHS in January 2010, provides for standardized HAI data submission and for implementation of best practices to prevent HAI in NM healthcare facilities.

Over the course of the last three years, the number of inpatient acute care facilities voluntarily submitting HAI data has increased. Prevention learning collaboratives have been well received by a variety of healthcare facilities including acute care hospitals, and long-term rehabilitative, behavioral health and drug treatment facilities. A public report was issued in December 2010 and the NMDOH HAI website was launched. The NM HAI Advisory Committee members remain committed to seeing NM healthcare facilities support strong HAI prevention measures and eliminate preventable HAI.

Structure

The NM HAI Advisory Committee helps guide the NM HAI Prevention Plan to create an ongoing, sustainable statewide program of HAI data submission, surveillance, prevention and public reporting. This guidance falls within the following areas:

- Establishing objectives, definitions, criteria and standards for HAI data submission
- Selecting HAI indicator(s) for surveillance and public reporting
- Recruiting healthcare facilities
- Supporting data collection through NHSN or other state-specific data collection systems
- Evaluating HAI surveillance and quality of data collected
- Providing and/or identifying training resources for the prevention and control of HAI
- Public reporting

The NM HAI Advisory Committee (current members listed in Appendix C) has been meeting monthly since February 2008. The Committee includes representatives from:

- Consumers
- Association for Professionals in Infection Control and Epidemiology (APIC) New Mexico
- New Mexico Hospital Association (NMHA)
- New Mexico hospitals (including infection preventionists and physicians with infection control expertise from large urban and smaller rural settings)
- New Mexico Medical Review Association (NMMRA)
- Local representative of Society for Hospital Epidemiology of America (SHEA)
- New Mexico Department of Health

The NM HAI Prevention Plan reflects national recommendations, including the HHS Action Plan to Prevent Healthcare-associated Infections, which were adapted to the needs and capacity of the NM healthcare system. Experience from other states, scientific literature, and discussions with experts further informed the Plan.

The NM HAI Advisory Committee recommended the use of NHSN as a mechanism to collect HAI surveillance data beginning in 2008. A feature in NHSN, known as "conferring rights", permits data sharing with NMDOH which allows for public reporting without duplication of work by healthcare facilities.

Infection preventionists (IPs) are professionals specially trained in monitoring and preventing infections in healthcare facilities: in NM, they have played the key role in establishing their facilities in NHSN, implementing data collection systems, following surveillance definition guidelines and championing implementation of best practice prevention measures. As the number of HAI being tracked and the complexity of data requirements increases, many facilities are seeing the need to provide IPs with broad facility support including enhanced information technology resources. Without the development of a facility-wide focus and strong leadership, elimination of preventable HAI will be an elusive target.

Surveillance

The House Joint Memorial 67 Task Force studied the feasibility of conducting surveillance for HAI in NM. Two HAI indicators for the NM pilot were chosen based on their significant impact on patients' health and also because hospitals can improve on those outcomes. The two indicators were CLABSIs in adult ICUs and influenza vaccination rates of healthcare personnel (HCP). Influenza vaccination of HCP is crucial because it protects them and, therefore, their vulnerable patients from influenza which can also cause severe illness and even death. Despite this knowledge, many HCP do not protect themselves and their patients through influenza vaccination. CLABSIs are monitored by many states because patients can become very sick, have prolonged hospital stays and even die from their infections. In addition, these infections can lead to additional and unnecessary expenses for patients and for the healthcare system. A central line is a vascular infusion device that terminates at or close to the heart in one of the great vessels and is used for infusion (e.g., medications), withdrawal of blood, or hemodynamic monitoring. A CLABSI is a primary bloodstream infection in a patient who had a central line in place at the time of, or within the 48 hour period before,

onset of the event (i.e., symptoms or positive blood culture). CLABSI surveillance also has objective, accurate and consistent definitions that allow for standardized data submission and analysis.

The six pilot hospitals have submitted CLABSI data to NHSN from nine ICUs of the following types: medical; surgical; neurosurgical; and medical-surgical since July 2008

With the 2009 HAI Act, voluntary HAI data submission was opened to qualified NM hospitals. This included 39 acute care and 4 long term care hospitals.

Starting January 2010, five new hospitals began to monitor CLABSI in NHSN resulting in seven additional ICUs submitting data during the second data collection year. The additional units included the following ICU types: pediatric; medical; surgical; and medical-surgical. The number of hospitals and ICUs submitting data on CLABSI nearly doubled from nine ICUs in six hospitals in the 2008 – 2009 pilot year to 16 ICUs in 11 hospitals during the second data collection period, May 1, 2009 – April 30, 2010.

The third NM voluntary data collection year (May 1, 2010 – April 30, 2011) ended with 16 facilities submitting NHSN data from 37 patient care units. During this reporting period, the NM HAI Advisory Committee added two HAI indicators. The first was to expand outside ICUs to submit data on CLABSI in non-ICU inpatient units. Then, in November 2010, facilities were encouraged to begin submitting data on *Clostridium difficile* infection (CDI). NM also participated in a pilot project with CDC on HCP influenza vaccination reporting which, for the 2010 – 2011 flu season, incorporated long term care facilities, dialysis and ambulatory surgery centers and physician practices in addition to hospitals.

Special Projects/HAI Emerging Infections Program

The Emerging Infections Program (EIP) is a population-based network of CDC and ten state health departments (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and their partners (e.g., IPs, academic centers, and other federal agencies) that serves as a national resource for surveillance, prevention and control of emerging infectious diseases. There are a number of activities conducted by EIP, including Healthcare-associated Infections Community Interface (HAIC) projects. There are two current HAIC projects in which NM is participating: 1) HAI and Antimicrobial Use Prevalence Survey; and 2) NHSN Denominator Simplification Project.

In addition to the above-mentioned national EIP projects, NM EIP is conducting a project to validate CLABSI data voluntarily submitted to NHSN by NM facilities.

For details on these special projects, see Appendix H.

Prevention

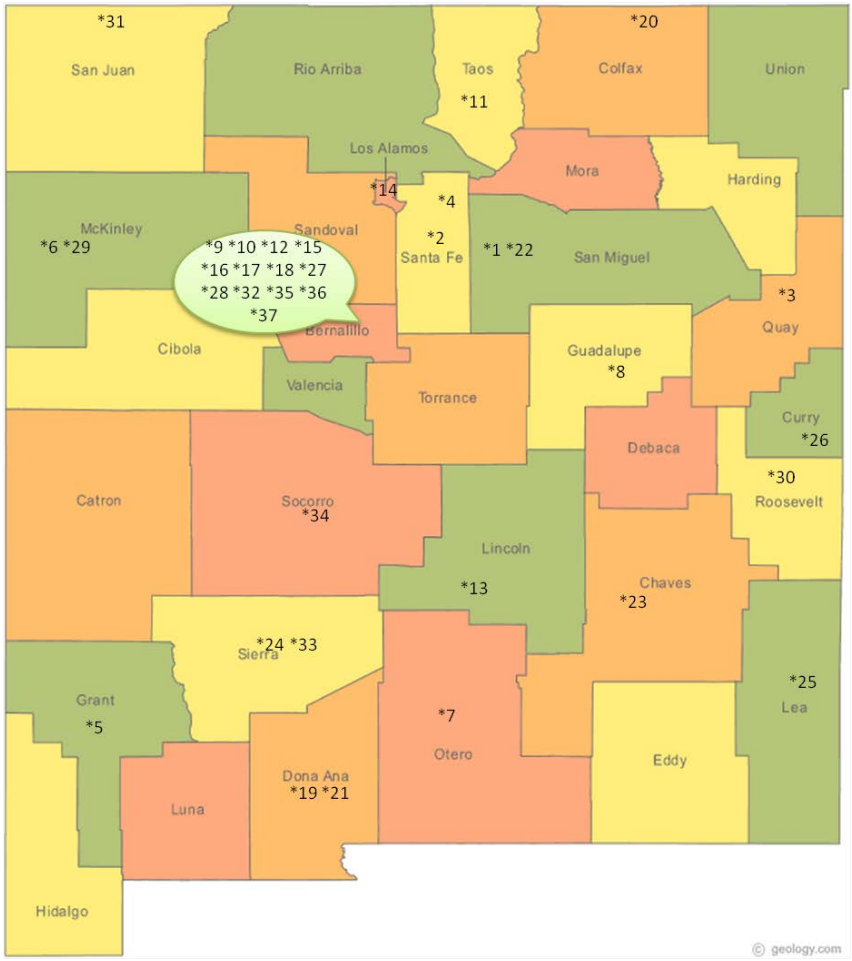
Statewide HAI reduction efforts in NM are guided by the NM HAI Prevention Plan which, in addition to standardizing data submission, provides for implementation of best practices to prevent HAI in NM healthcare facilities. New Mexico Medical Review Association (NMMRA) coordinates the activity of HAI learning collaboratives and prevention initiatives related to the indicators selected by the NM HAI Advisory Committee.

The NM healthcare community has a strong record of working collaboratively to improve health outcomes: New Mexico Influenza Vaccine Consortium, New Mexico Prescription Improvement Collaborative, and Surgical Infection Prevention Collaborative are examples. Concurrent with the beginning of the NM HAI surveillance

pilot, in May 2008, NMMRA engaged 16 facilities in 14-month HAI prevention collaborative to reduce MRSA infections. Self-reported data at the end of the collaborative showed a 48% reduction in hospital-onset MRSA bloodstream infections. This success helped encourage facilities to continue working with NMMRA and NMDOH on additional prevention initiatives.

In accordance with the NM HAI Prevention Plan, NMMRA recently completed a year-long CLABSI prevention collaborative focused on CLABSI detection and prevention, as well as a workgroup on HCP influenza vaccination. A statewide CDI prevention collaborative, incorporating infection control staff plus environmental services, pharmacies, laboratories, and other necessary hospital staff, began in March 2011.

Figure 1. Map of facilities submitting HAI data to NMDOH HAI Reporting Group or in the CLABSI Collaborative as of April 30, 2011



This map represents the healthcare facilities contributing data to NMDOH (either through NHSN or on HCP influenza vaccination) or who participated in the 2010-2011 CLABSI Collaborative.

Appendix Appendix A provides a list of the facilities and the data submission or prevention activities in which they participate.

1. Alta Vista Regional Hospital
2. Christus St. Vincent Regional Medical Center
3. Dr. Dan C. Trigg Memorial Hospital
4. Espanola Hospital
5. Fort Bayard Medical Center
6. Gallup Indian Medical Center
7. Gerald Champion Regional Medical Center
8. Guadalupe County Hospital
9. Healthsouth Rehabilitation Hospital
10. Heart Hospital of New Mexico
11. Holy Cross Hospital
12. Kindred Hospital - Albuquerque
13. Lincoln County Medical Center
14. Los Alamos Medical Center
15. Lovelace Medical Center
16. Lovelace Rehabilitation Hospital
17. Lovelace Westside Hospital
18. Lovelace Women's Hospital
19. Memorial Medical Center
20. Miners' Colfax Medical Center
21. Mountain View Regional Medical Center
22. New Mexico Behavioral Health Institute
23. New Mexico Rehabilitation Center
24. New Mexico State Veterans' Home
25. Nor-Lea General Hospital
26. Plains Regional Medical Center
27. Presbyterian Hospital
28. Raymond G. Murphy VA Medical Center
29. Rehoboth McKinley Christian Health Care
30. Roosevelt General Hospital
31. San Juan Regional Medical Center
32. Sequoyah Adolescent Treatment Center
33. Sierra Vista Hospital
34. Socorro General Hospital
35. Specialty Hospital of Albuquerque
36. Turquoise Lodge Hospital
37. University of New Mexico Hospital

New Mexico Healthcare-associated Infections Results

Results of Central Line-associated Bloodstream Infection Surveillance

New Mexico CLABSI Data

A total of 32 ICU and non-ICU units at 15 facilities submitted CLABSI data for at least four months from May 1, 2010 through April 30, 2011. These 32 units reported 32 CLABSI events and a total of 44,235 central line days. The SIR calculated for the 32 units was 0.39. The majority of the central lines were found in ICU locations, with the 18 locations reporting a combined total of 35,482 central line days. The non-ICU units reported a total of 8,753 central line days. Overall, 61% fewer CLABSI events were observed during the reporting period compared to the national reference data.

During the reporting year of May 1, 2010 through April 30, 2011, 18 ICUs reported at least four months of data. These data were used to calculate an ICU SIR of 0.41 (95% CI 0.27, 0.59*)* which is the same as the previous year and also better than the national reference data. The calculated SIR of 0.41 indicates that the 18 ICUs together observed 59% fewer CLABSI than predicted.

Beginning November 1, 2010 through April 30, 2011, 14 non-ICUs reported at least four months of data. The non-ICU SIR was 0.30 (95% CI 0.10, 0.68) which was better than the national reference data. The calculated SIR of 0.30 indicates that the 14 non-ICU units together observed 70% fewer CLABSI than predicted.

Table 1. CLABSI SIRs for all reporting units in NMDOH Reporting Group with at least 4 months of data for ICU and non-ICU units May 1, 2010 through April 31, 2011

Unit type	Number of units included in SIR*** calculation	Observed CLABSI infections May 1, 2010 – April 30, 2011	NHSN calculated number of predicted CLABSI infections*	New Mexico aggregate SIR	95% confidence interval**	Comparison between aggregate SIR and NHSN SIR (1.0)
ALL	32	32	82.2	0.39	0.27, 0.55	★ Better
ICU	18	28	68.8	0.41	0.27, 0.59	★ Better
Non-ICU	14	4	13.4	0.30	0.10, 0.68	★ Better

*Calculation is based on actual reported central line days for the unit type and the corresponding NHSN (national benchmark) rate for that type of unit.

**This range indicates that the true value lies somewhere between the upper and lower limits.

*** The SIR is a ratio that compares the number of observed events to the number expected. A SIR less than 1 indicates that the number of observed HAI events is fewer than the number predicted while a SIR greater than 1 indicates that the number of observed events is greater than predicted. SIR = observed CLABSI infections / NHSN predicted CLABSI infections, see Appendix E.

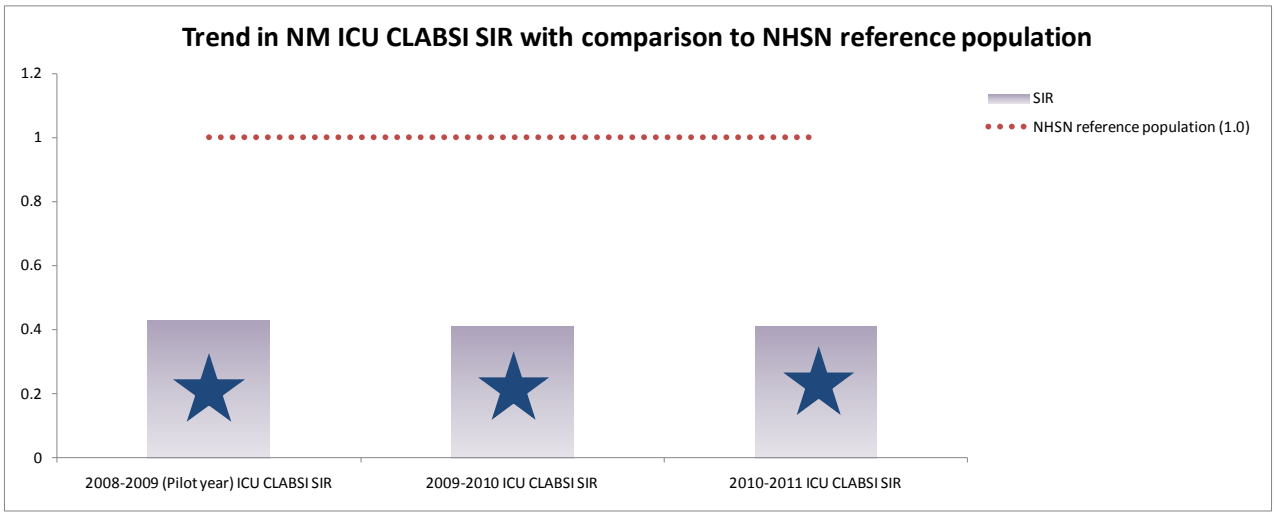
The state aggregate ICU and non-ICU CLABSI SIR were both better than the national aggregate CLABSI SIR.

Table 2. Three years of CLABSI SIRs for ICUs in NMDOH Reporting Group with at least 4 months of data entered in NHSN per reporting year

HAI reporting year	Number of units included in SIR calculation	Observed CLABSI infections	NHSN calculated number of predicted CLABSI infections*	New Mexico aggregate SIR	Comparison between aggregate SIR and NHSN SIR (1.0)
Pilot (July 2008 – May 2009)	6	19	44.4	0.43	★ Better
May 2009 – April 2010	16	22	53.7	0.41	★ Better
May 2010 – April 2011	18	28	68.8	0.41	★ Better

*Calculation is based on actual reported central line days for the location and the corresponding NHSN (national benchmark) rate for that type of location.

Figure 2. Trend in NM ICU CLABSI SIR with comparison to NHSN reference population



Overall, CLABSI surveillance and prevention has improved in NM. More units are now submitting CLABSI data and CLABSI SIRs remain lower than the HHS reduction target. Reporting units have adopted practices to prevent CLABSIs. The state aggregate ICU-only CLABSI SIR for May 1, 2010 through April 30, 2011 was no different than the NM CLABSI SIR calculated for the prior two years.

Healthcare Facility-specific ICU CLABSI Data

Data from NM healthcare facilities that have been voluntarily submitting data for more than one full year are presented in Appendix B. These facilities submitted only ICU CLABSI data during this time period. Each facility-specific page in Appendix B includes three components: 1) a chart of the ICU SIR for the facility which depicts the facility SIR relative to the NHSN reference population; 2) an ICU SIR table with additional information including the number of infections during the time period; 3) highlights from the facility on their current HAI prevention measures.

Several facilities reported zero infections during the data submission time frame. In alignment with reporting standards followed by NHSN and CDC, these facilities do not have a SIR calculated due to reduced reliability of data in this circumstance. It does not mean that their data is suspect, but rather that zero events cannot produce a valid comparison to the national reference population. These facility-specific CLABSI SIR graphs state "In alignment with reporting standards followed by NHSN and CDC, facilities with less than one predicted infection do not have a SIR calculated due to reduced reliability of data."

Limitations

One limitation of using the NHSN pooled mean as a reference for comparison purposes is that it is based on national 2006 – 2008 CLABSI data whereas the NM CLABSI SIRs reported here are from 2010 – 2011. This is a limitation because factors that have changed over time, such as improvements in CLABSI prevention and outcomes, may have also changed the national mean.

Data submitted to NHSN have been only partially validated and, therefore, there is limited assurance of consistent case finding and accurate application of surveillance definitions.

For prevention information on CLABSI, see Appendix D.

Results of New Mexico Healthcare Personnel Influenza Vaccination

For background information of healthcare personnel (HCP) influenza vaccination, see Appendix F.

Data was collected for multiple HCP categories during the 2010 – 2011 influenza vaccination season. Data is reported here for the 'employee' category (individuals paid directly by the healthcare facility) only because this data is more reliable and complete and is more directly comparable to previous influenza vaccination reporting in NM.

The total number of healthcare employees receiving influenza vaccination for the 2010 – 2011 season was 14,856 of 24,564 HCP directly employed by 24 facilities which had reported data the previous season (2009 – 2010). The 2010 – 2011 statewide HAI-reporting aggregate rate was 60.4% of employees vaccinated. The 24 participating facilities included six long-term care and behavioral health facilities in addition to 18 acute care hospitals.

Table 3. Healthcare personnel employee category: 2010 – 2011 influenza vaccination for facilities participating in more than 1 year of HCP influenza vaccination data submission

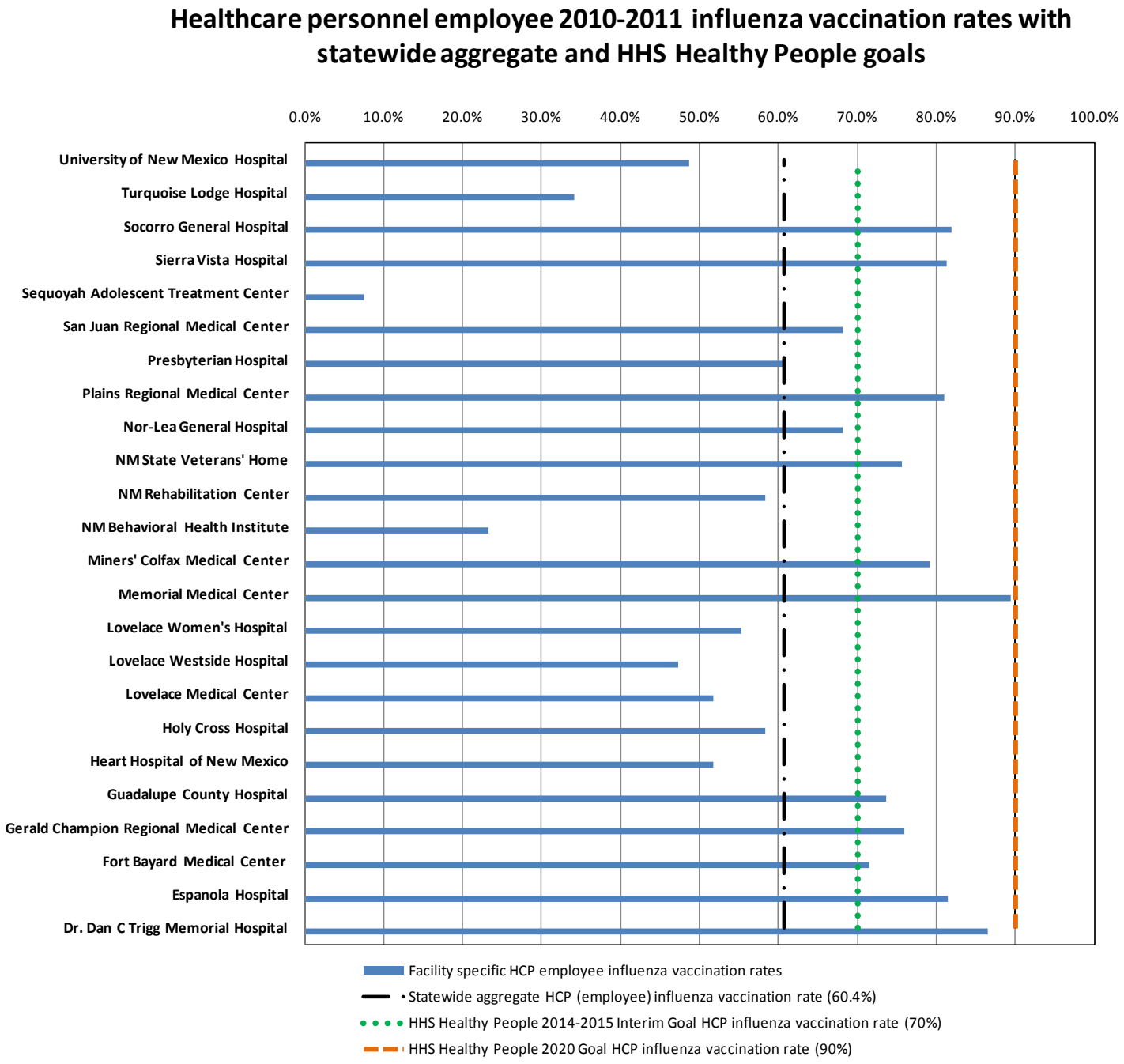
Influenza season	Number of facilities submitting HCP influenza vaccination data	Aggregate number of employees vaccinated between 8/1/10 – 3/31/11	Aggregate number of employees who worked at the facility between 10/1/10 – 3/31/11	Aggregate NM 2010 – 2011 comparable influenza vaccination rate	NM and HHS Healthy People 2014-2015 interim influenza vaccination goal	Aggregate NM 2009 – 2010 comparable influenza vaccination rate
2010 – 2011	24	14,856	24,564	60.4%	70.0%	60.2%

The NM aggregate HCP influenza vaccination rate for 2010 – 2011 (60.4%) was similar to the 2009 – 2010 NM rate (60.2%). Aggregate NM HCP vaccination rates also appear to be similar to those reported nationally in surveys conducted by CDC. One of those telephone surveys conducted by CDC in March 2011 indicated that 58.9% of contacted HCP received the 2010 – 2011 influenza vaccine.[7]

Facility-specific Rates

Thirteen facilities reported more employees vaccinated than the reported statewide aggregate rate. Eleven of those thirteen facilities were able to exceed the HHS Healthy People 2014-2015 Interim Goal of 70% vaccinated in the employee category. This target has been adopted by NM HAI Advisory Committee. Five facilities fell below 50% of employees vaccinated. The range of facilities reporting less than 50% vaccinated employees was 7.5%-48.7%%.

Figure 3. Healthcare personnel employee 2010 – 2011 influenza vaccination rates with statewide aggregate and state/national goals



Limitations

The NM HCP influenza vaccination data has limitations. There is not currently a standardized method for collection of HCP influenza vaccination data and therefore no consistent national benchmark for comparison purposes. It should be noted that the reported rates are only for those HCP employed directly by the facility (i.e., receive a paycheck from the facility) whereas previous reports (2008 – 2009 and 2009 – 2010) included physicians and mid-level providers who may or may not have been employed by the facility. Several facilities reported that limited amounts of vaccine were available to vaccinate employees and some facilities reported being unable to provide vaccine onsite to employees at free or reduced cost, which is a recommended practice to increase HCP vaccination rates.

For prevention information on HCP influenza vaccination, see Appendix I.

Results of *Clostridium difficile* Infection Surveillance

For background information on *Clostridium difficile* infection (CDI), see Appendix G.

Table 4. The number of units submitting CDI LabID event data to NHSN for at least 4 months during November 2010 through April 2011 by CDC defined location types (i.e., hospital units)

CDC defined location types submitting CDI- LabID event data for ≥4 months	Total number of units submitting data
Surgical ICU	1
Hematology/Oncology Specialty Care Area	1
Stepdown unit	1
Medical ICU	2
Medical/Surgical Ward	2
Medical/Surgical ICU	5
Medical Ward	5
Total	**17**

Seventeen units in eleven hospitals reported CDI LabID events for at least four months beginning in November 2010. CDI surveillance is still relatively new and the baseline period selected by NHSN for calculating a national facility-wide SIR is 2009 – 2010. NHSN has not yet calculated and released this SIR. The six months of NM data submission starting in November 2010 was a trial period as hospitals had previously only collected CDI data internally, using non-standardized definitions. The introduction of an NHSN definition, which is algorithm based, was a departure from previous methods of data collection. Because there is not yet a year of data or a national

comparison figure to guide interpretation of performance, no aggregate data are presented in this report.

Limitations

This was a limited time frame for data collection with a new data submission protocol and no published comparable national data using standardized definitions.

Currently there is no NQF endorsed measure for CDI and many states are reporting CDI results in disparate ways. No NHSN CDI benchmark has been published for comparison. No nationally standardized format for reporting data back to the public in a meaningful fashion has been established.

For prevention information on CDI, see Appendix I.

Prevention of Healthcare-associated Infections in New Mexico

In addition to collecting surveillance data on CLABSI and CDI events and HCP influenza vaccination from the facilities participating in the NMDOH HAI Reporting Group, the NM HAI Program works closely with NMMRA and these healthcare facilities to support prevention improvement. Prevention measure training provided by or through the NM HAI Program is open to healthcare facilities whether or not they are part of voluntary data submission.

Central Line-associated Bloodstream Infections Collaborative

The first HAI prevention project for the NM HAI Initiative was the year-long CLABSI Prevention Collaborative. It was designed to help participating healthcare facilities work together to expand and enhance surveillance methods and best practices, educate patients and providers, share knowledge, and ultimately decrease the rate of CLABSIs in both ICU and non-ICU settings.

Twenty-five acute care and long term acute care hospitals took part in the CLABSI Collaborative; four hospitals were educational members only and did not submit data. Ten of the facilities were large hospitals (over 100 beds); 15 hospitals were urban and ten rural. Four facilities were long term acute care and 21 were acute care.

Activities of the CLABSI Collaborative included four full day face-to-face learning sessions, ten monthly conference calls with presentations, and four educational webinars. The learning sessions averaged attendance between 80% –90% of the 25 facilities. Overall, attendance averaged 58 participants for each session.

An important feature of CLABSI Collaborative participation was an optional onsite project support visit with an expert external team comprised of CLABSI Collaborative Steering Committee members. This visit provided an opportunity for leadership and clinical staff from the facility to describe the work being done to improve patient safety and reduce infections and to strengthen support for the facility team. Ten of the hospitals requested a project support visit. Supplemental clinical presentations were conducted with eight hospitals; an average of 19 clinicians (range 9 – 43) attended. Qualitative information gathered during the project support visits, as well as observational findings, were included in an executive report sent to the administrative leader and project lead for each of the facilities.

In addition to learning activities, hospitals were responsible for submitting monthly outcome and process data to CLABSI Collaborative staff. The data was analyzed and reported back to each facility along with comparisons to aggregate Collaborative data.

Findings

The CLABSIs rate per 1000 central line days for the participating hospital units decreased for each four month reporting period. The aggregate Collaborative rate decreased from 1.43 infections per 1000 central line days to 0.78 and finally to 0.72 infections per 1000 central line days for the final four months of data collection. For comparative purposes, the pooled mean for a national reference population of medical/surgical units with more than fifteen beds (NHSN report data summary 2009) was 1.3 infections per 1000 central line days.

Three indicators of infection prevention evidence-based best practices were tracked during the Collaborative. The processes measured included adherence to central line insertion practices, readiness to report data, and the utilization rate of central lines.

Central line insertion checklists are a proven way of monitoring and assuring completion of essential safety elements. One of the goals of the CLABSI Collaborative was to use the checklist each time a central line was placed in the hospital. Documentation submitted during the Collaborative showed that over 80% of central lines inserted had completed checklists. Participating hospitals continue to track and monitor central line checklist completion and submission.

Readiness to report was another indicator tracked by the Collaborative. This attribute is important for hospitals to monitor as NHSN data submission expands for CMS reporting and additional NM HAI indicators. Readiness was measured through submission of complete data reports. The participants showed improved completeness of reporting over the course of the Collaborative. The rate increased from 70.2% for the first four months of the Collaborative to 72.0% and finally to 79.2% for the final four months.

The central line utilization ratio, the third prevention indicator, is an estimate of the risk of exposure to a CLABSI in a specific hospital unit. This ratio is calculated using central line days divided by patient days for the unit. The closer the ratio is to one, the higher the utilization of central lines in that unit. A ration of one indicates that every patient with one or more central lines is potentially at risk for a CLABSI. For the Collaborative group, the central line utilization ratio was 0.29 for the first reporting time period, 0.26 for the second period and 0.33 for the last time period. Over the course of the CLABSI Collaborative, IPs reported an increased ability for their facilities to collect and report central line day data.

Hospitals were encouraged and supported to implement additional evidence-based interventions to prevent CLABSIs over the course of the Collaborative. Hospitals identified their current and planned interventions in a summary report. There were 15 evidence-based interventions targeted for implementation in the Collaborative, including use of an observer at central line insertion, use of a central line kit and documentation of central line necessity. Participating hospitals augmented their CLABSI prevention efforts throughout the Collaborative: at the beginning, a total of 87 interventions were implemented; 52 additional interventions were implemented during the project and 54 were in the planning stages by the end of the project.

Healthcare Personnel Work Group

NMMRA developed a set of resources to help healthcare facilities vaccinate HCP. Vaccination campaign materials, posters, tracking resources and other relevant information were provided electronically to all NM IPs. A NMDOH webinar explaining the importance of vaccinating HCP and methods for increasing HCP vaccination rates was held for IPs and employee health nurses. Thus resources were widely distributed across the state for the 2010 – 2011 influenza season.

Clostridium difficile Infection Collaborative

The third HAI prevention initiative for NM involves reducing healthcare-associated CDI. Over the past two decades, CDI has been increasing in both incidence (i.e., the number of newly diagnosed cases during a specific time period) and virulence (i.e., a measure of the severity of the disease a microorganism is capable of causing) thereby causing significant illness and death. Prevention and management of this HAI involves all healthcare settings, especially acute care and long term care. For this reason, the CDI Prevention Project will involve all appropriate settings as resources allow. The project is in the recruitment and development phases and educational activities will begin August 2011.

The NM CDI Prevention Project aims to reduce the incidence of these HAI by 30% over 24 months. To achieve this goal, the following activities will take place: a) improve adherence to recommended practices for preventing CDI, including hand hygiene and contact precautions; b) improve surveillance of CDIs within facilities; c) educate nurses at the bedside to recognize infections; d) perform contact precautions and alert patients' healthcare providers; e) promote antimicrobial stewardship within facilities; and e) improve diagnosis and treatment.

Using a patient-centered approach, appropriate educational modules will be delivered to each relevant group of HCP (i.e., nursing, environmental services, pharmacy, lab, clinicians) using web-enabled conferences and customizable materials. A pilot group has begun the quick start curriculum of an antimicrobial stewardship program using a real time distance learning program sponsored by the University of New Mexico.

Conclusions

The NM HAI Initiative includes numerous individuals and organizations that are committed to the reduction and, wherever possible, the elimination of HAI. The key findings in this report include CLABSI SIRs at the state and facility levels that were better than national level reference data and HCP personnel influenza vaccination rates that were about the same as national level reference rates. While these early findings are encouraging, the NM HAI Advisory Committee and partner healthcare facilities will continue to follow progress in the state as they implement best practices for monitoring and preventing HAI in order to improve the health status of the NM population. The NM HAI Initiative has grown over time and will continue to do so. Collaboration among healthcare facilities and with partner entities, such as the NM HAI Advisory Committee and its component organizations, is exceptionally strong. This has served the NM HAI Initiative well as evidenced by early outcomes. The new CDI monitoring and prevention efforts will continue in NM, research to understand the broad issues at the state and national levels will evolve and stakeholders will continue

to provide input that will influence state and national goals and objectives related to HAI prevention. The NM HAI Advisory Committee plans to continue to provide a report such as this one to the public on an annual basis.

Appendices

Appendix A: Participating Facilities

Acute and long-term acute care healthcare facilities voluntarily reporting HAI data to NMDOH and or participating in New Mexico HAI Program prevention activities

	Facility	CLABSI reporting began prior to 5/1/2010	CLABSI and/or CDI reporting began after 5/1/2010	CLABSI Collaborative 2010 – 2011	HCP reporting for more than one flu season
1	Alta Vista Regional Hospital			X	
2	Christus St. Vincent Regional Medical Center			X	
3	Dr. Dan C. Trigg Memorial Hospital			X	X
4	Espanola Hospital				X
5	Fort Bayard Medical Center				X
6	Gallup Indian Medical Center			X	
7	Gerald Champion Regional Medical Center	X		X	X
8	Guadalupe County Hospital		X		X
9	Healthsouth Rehabilitation Hospital			X	
10	Heart Hospital of New Mexico	X		X	X
11	Holy Cross Hospital	X		X	X
12	Kindred Hospital - Albuquerque			X	
13	Lincoln County Medical Center		X		
14	Los Alamos Medical Center		X		
15	Lovelace Medical Center		X	X	X
16	Lovelace Rehabilitation Hospital			X	
17	Lovelace Westside Hospital	X		X	X
18	Lovelace Women's Hospital	X		X	X
19	Memorial Medical Center	X		X	X
20	Miners' Colfax Medical Center		X		X
21	Mountain View Regional Medical Center			X	
22	New Mexico Behavioral Health Institute				X
23	New Mexico Rehabilitation Center				X
24	New Mexico State Veterans' Home				X
25	Nor-Lea General Hospital				X
26	Plains Regional Medical Center	X		X	X
27	Presbyterian Hospital	X		X	X
28	Raymond G. Murphy VA Medical Center			X	
29	Rehoboth McKinley Christian Health Care Services	X		X	
30	Roosevelt General Hospital		X		
31	San Juan Regional Medical Center	X		X	X
32	Sequoyah Adolescent Treatment Center				X
33	Sierra Vista Hospital		X	X	X
34	Socorro General Hospital		X	X	X
35	Specialty Hospital of Albuquerque			X	
36	Turquoise Lodge Hospital				X
37	University of New Mexico Hospital	X		X	X

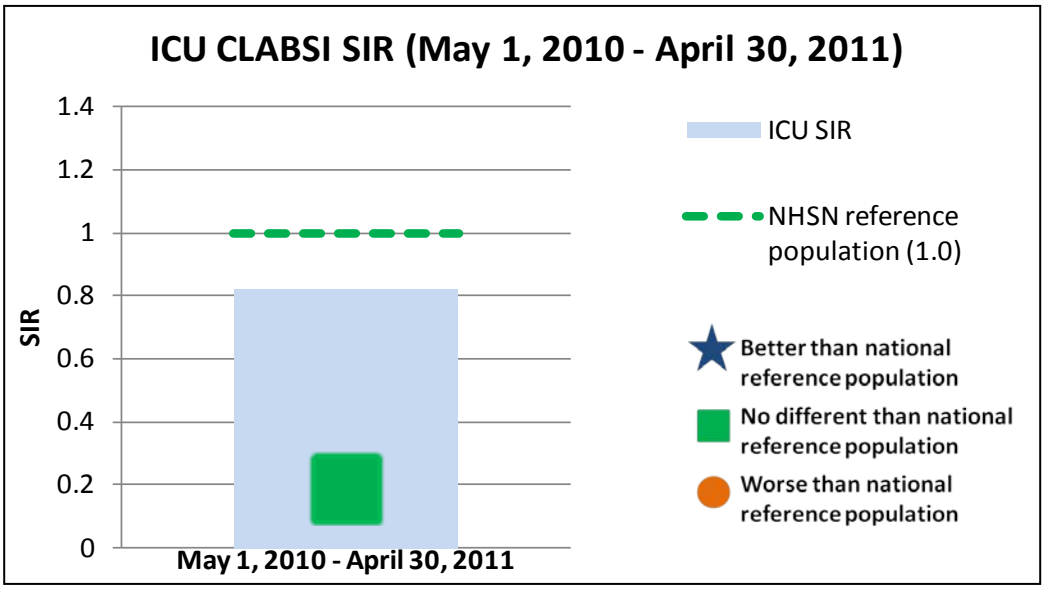
Appendix B: Facility-specific Reports

Facility-specific reports are included on the next 11 pages.

Gerald Champion Regional Medical Center

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR	95% confidence interval	Comparison between facility ICU SIR and NHSN reference population (1.0)
1	ICU	1	1.22	0.82	0.04, 3.90	No different

Healthcare-associated infection (HAI) prevention highlights as reported by Gerald Champion Regional Medical Center

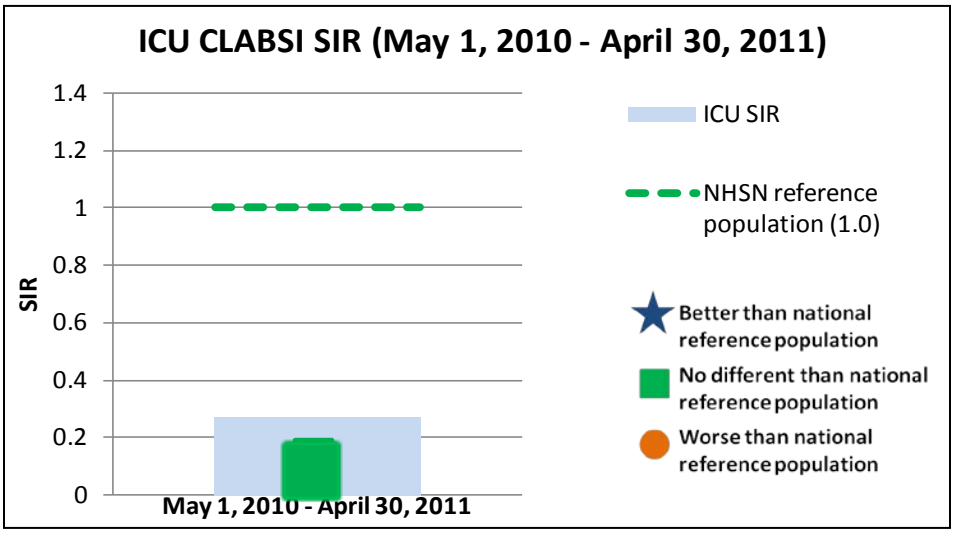
- CLABSI: Participated in CLABSI Collaborative; implemented best practices (i.e., central line insertion kit use, updating line maintenance techniques and components)
- Comprehensive HAI prevention: Invested in data mining software for real time notification of lab results which provides more timely and targeted treatment; simplified equipment cleaning processes to promote standardized disinfection techniques
- Hand hygiene: Enhanced visitor and staff education on hand hygiene importance
- CDI: Joined the CDI Collaborative which will involve several departments in the facility to effectively prevent CDI; participated in a NM HAI Program antimicrobial stewardship project which includes practitioners evaluating prescribing patterns, analyzing the formulary, and increasing awareness regarding the proper use of antimicrobial agents; developed an in-house educational session: 'Antibiotics made Simple'

*For background and additional information, see Appendix D and Appendix E.

Heart Hospital of New Mexico

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR	95% confidence interval	Comparison between facility ICU SIR and NHSN reference population (1.0)
1	ICU	1	3.71	0.27	0.01, 1.28	No different

Healthcare-associated infection (HAI) prevention highlights as reported by Heart Hospital of New Mexico

In the process of aiming for zero CLABSI, the following steps have been taken:

- Early implementation of the central line bundle with enhancements as indicated
- Adoption of checklists for insertion of central lines, and plans for assuring objective observers for checklist completion
- Use of full barrier coverage of the patient during insertion of the line
- Improvement of central line maintenance through use of a standard dressing change kit

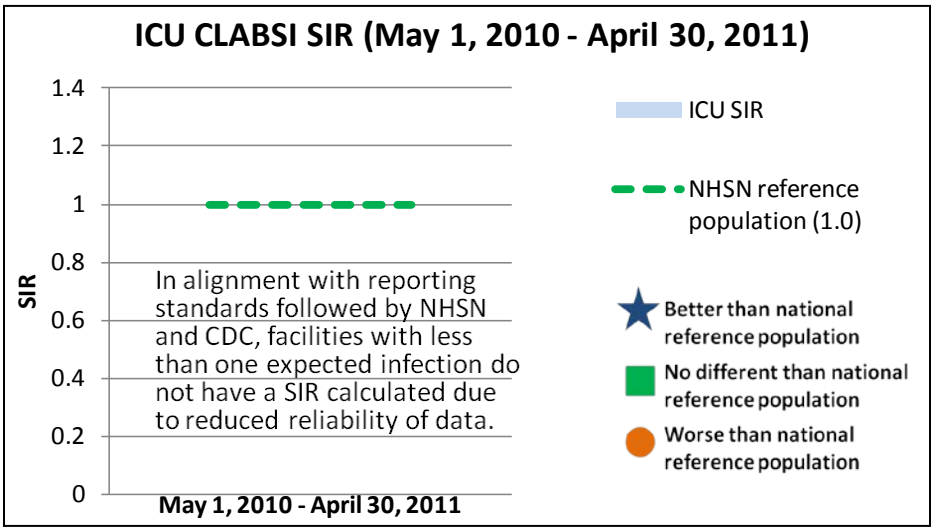
Additional HAI are tracked internally, including MRSA and CDI. We have the critical cooperation of our surgeons, surgical staff, hospitalists and nurses, as well as our leadership.

*For background and additional information, see Appendix D and Appendix E.

Holy Cross Hospital

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR
1	ICU	0	0.57	In alignment with reporting standards followed by NHSN and CDC, facilities with less than one expected infection do not have a SIR calculated due to reduced reliability of data.

Healthcare-associated infection (HAI) prevention highlights as reported by Holy Cross Hospital

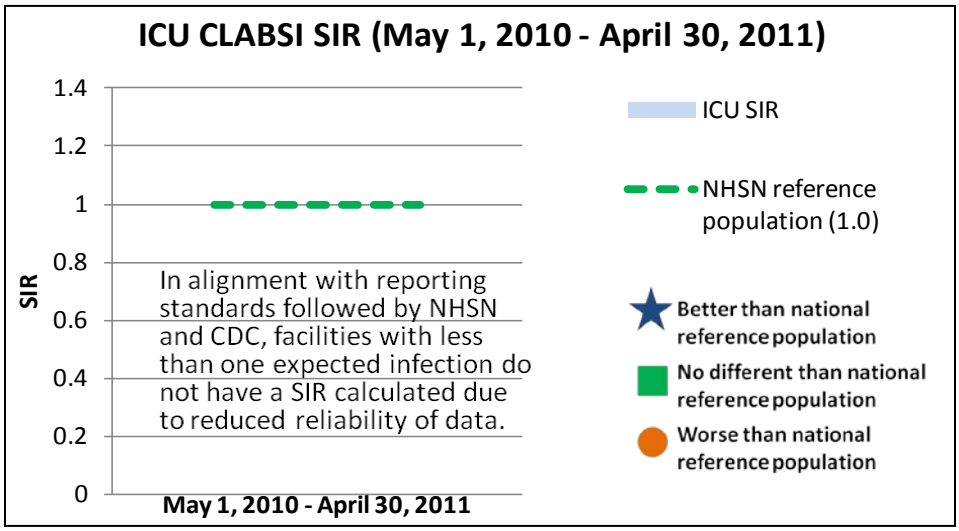
- Participation in CLABSI Collaborative to assure that current standards and evidence-based practices are implemented, including central line kits and checklists
- Adoption of the patient safety program, Lifewings, which uses a team approach and empowers staff to speak up and stop any potentially unsafe act
- Implementation of ventilator 'Bundle' for standardized order sets and practices
- Update of foley catheter policy to reflect current recommendations for maintenance and timely removal of foley devices
- Implementation of current guidelines and practices to detect *Clostridium difficile* and provide recommended environmental cleaning and isolation precautions
- Quarterly HAI event review by hospital staff committees for compliance with accepted standards, any deviation reported and identification of possible solution

*For background and additional information, see Appendix D and Appendix E.

Lovelace Westside Hospital

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR
1	ICU	0	0.53	In alignment with reporting standards followed by NHSN and CDC, facilities with less than one expected infection do not have a SIR calculated due to reduced reliability of data.

Healthcare-associated infection (HAI) prevention highlights as reported by Lovelace Westside Hospital

CLABSI prevention initiatives:

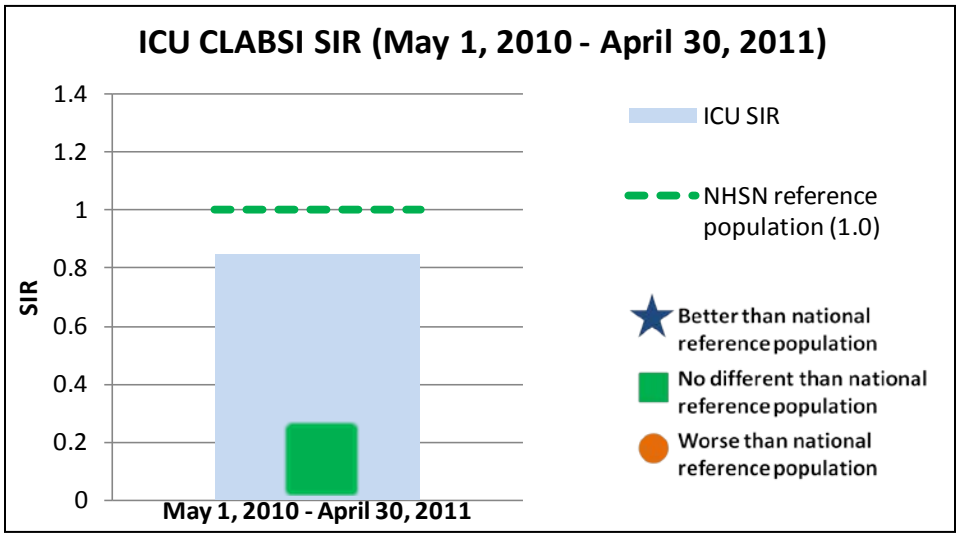
- Organized prevention practices that had been initiated but lacked formal outlines and checklists
- Completed education at all nursing staff meetings on the checklists and forms as well as the concepts of "IF NO, THEN STOP"
- Created a primary vascular access nurse position and charged a vascular access certified staff member with the responsibility of oversight of the program working closely with Infection Prevention
- Revised documentation to reflect appropriate measures of vascular access steps
- Initiation of signage to indicate peripherally inserted central line procedure in progress to limit interruption

*For background and additional information, see Appendix D and Appendix E.

Lovelace Women's Hospital

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR	95% confidence interval	Comparison between facility ICU SIR and NHSN reference population (1.0)
1	ICU	1	1.18	0.85	0.04, 4.02	No different

Healthcare-associated infection (HAI) prevention highlights as reported by Lovelace Women's Hospital

An improvement team was formed to address reduction in CLABSIs and the facility joined the CLABSI Prevention Collaborative of New Mexico, resulting in:

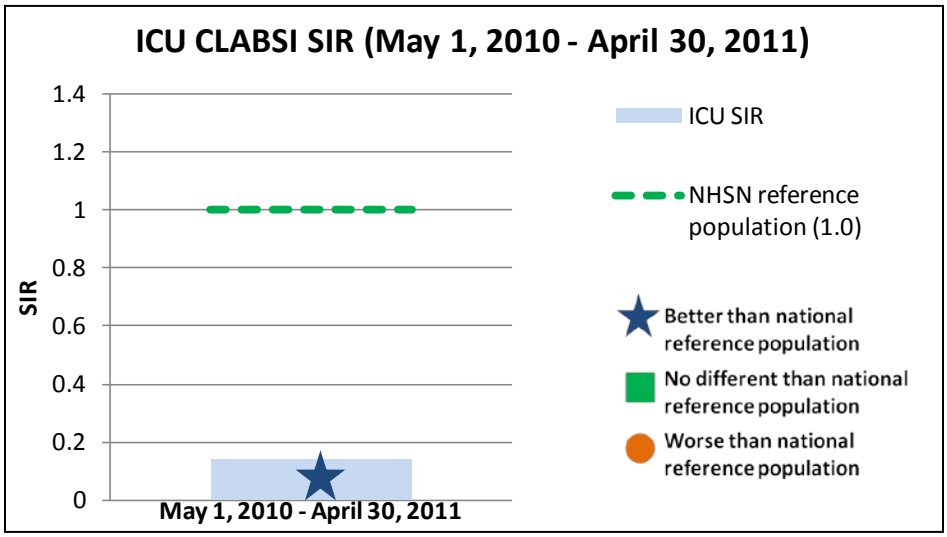
- Implementation of a hospital-specific central line bundle of evidence-based interventions for patients with central lines, which begins with a check-list for all insertions
- Evaluation and introduction of products to decrease infections
- Increased education on the management and care of central lines for both patients and staff
- Continuing to monitor CLABSI rates throughout the institution, with a goal of reducing infections to zero

*For background and additional information, see Appendix D and Appendix E.

Memorial Medical Center

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR	95% confidence interval	Comparison between facility ICU SIR and NHSN reference population (1.0)
1	ICU	1	7.24	0.14	0.00, 0.66	★ Better

Healthcare-associated infection (HAI) prevention highlights as reported by Memorial Medical Center

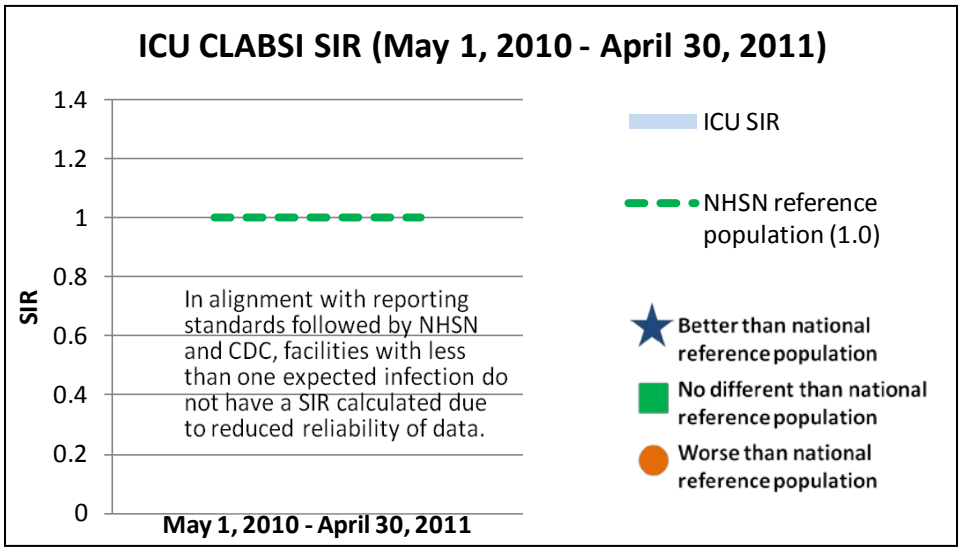
- Hand Hygiene: Installation of over 600 automated dispensers to provide quick, easy, access to hand hygiene and use of reminder placards on patient room doors
- CLABSI: Participation in the CUSP program and the NM CLABSI Collaborative improved data collection for central line days, resulted in 100% auditing of central line insertion checklists, improved documentation on central lines and encouraged additional evidence-based practices
- CDI: Improvement in terminal cleaning procedures of rooms where patients had CDI, signage to provide a visual indicator of CDI isolation status for the environmental team, and identification of positive CDI patients due to moving from EIA to PCR testing
- HCP vaccination recognition by The Joint Commission for the 2010-2011 level of participation

*For background and additional information, see Appendix D and Appendix E.

Plains Regional Medical Center

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Comparison between facility ICU SIR and NHSN reference population (1.0)
1	ICU	0	0.49	In alignment with reporting standards followed by NHSN and CDC, facilities with less than one expected infection do not have a SIR calculated due to reduced reliability of data.

Healthcare-associated infection (HAI) prevention highlights as reported by Plains Regional Medical Center

Central Line Bundle Implementation Methods:

Participated in NM CLABSI Prevention Collaborative to learn and share current evidence-based measures to incorporate in Bundle implementation and improvement. Specific implementation steps included:

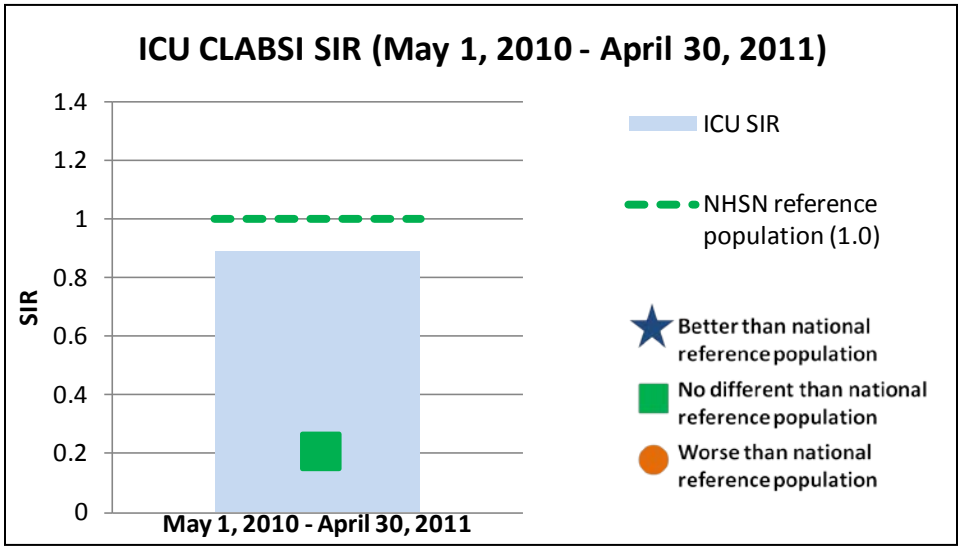
- Educated providers at departmental meetings
- Created patient education and staff awareness "Bundle Story Boards" for patient care units
- Presented Bundle info and Insertion Kit at Nurse Executive Committee
- Took Rolling Cart to educate staff in units and provided on-line nurse training
- Performed surveillance, collected "line days" and gave feedback to stakeholders

*For background and additional information, see Appendix D and Appendix E.

Presbyterian Hospital

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR	95% confidence interval	Comparison between facility ICU SIR and NHSN reference population (1.0)
3	ICUs	13	14.6	0.89	0.53, 1.42	No different

Healthcare-associated infection (HAI) prevention highlights as reported by Presbyterian Hospital

2011 Infection Prevention Plan includes:

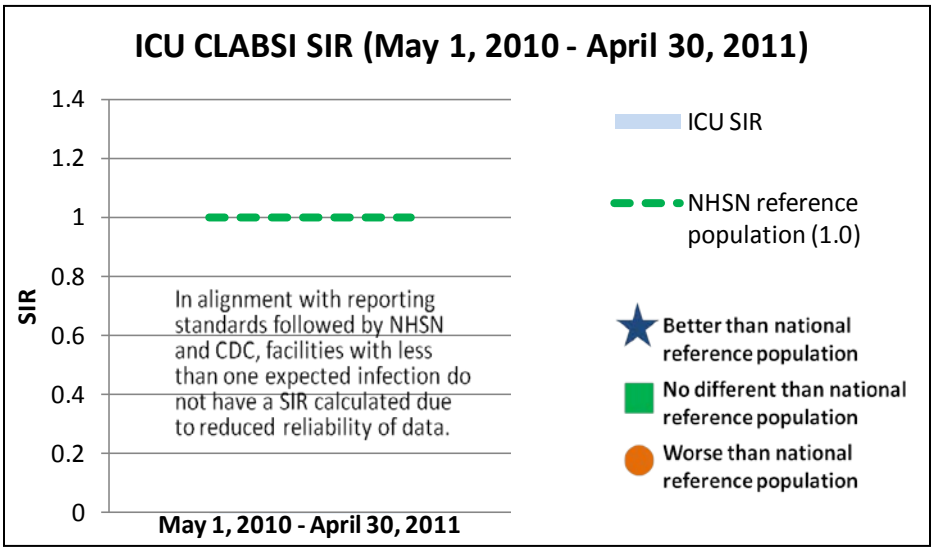
- Implementation and monitoring of the 2011 National Patient Safety Goals and standards related to ICU CLABSI
- Trial of a new technology product to support the practice of cleaning the hubs prior to introduction of intravenous fluids and medications
- Placement of central line catheters using evidence-based practices supporting aseptic techniques
- Demonstration of compliance through tracking CLABSI insertion bundles and completion rates
- Performance of root cause analysis on all CLABSIs identified and develop and implement corrective actions plans as indicated

*For background and additional information, see Appendix D and Appendix E.

Rehoboth McKinley Christian Health Care Services

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

The standardized infection ratio (SIR) is the hospital's number of infections compared to hospitals across the country as reported to National Healthcare Safety Network (NHSN).*



ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Comparison between facility ICU SIR and NHSN reference population (1.0)
1	ICU	0	0.43	In alignment with reporting standards followed by NHSN and CDC, facilities with less than one expected infection do not have a SIR calculated due to reduced reliability of data.

Healthcare-associated infection (HAI) prevention highlights as reported by Rehoboth McKinley Christian Health Care Services

- CLABSI: Use of a customized central line insertion kit incorporating best practice standards and staff input; use of a disinfection cap for our leur access ports and connectors to assure a consistent cleaning method; staff education on CLABSI prevention
- CAUTI: Decreased the use of foley catheters when possible; use of checklist to evaluate necessity of foley; nurses review of catheter use with patient's physician
- Ventilator-associated pneumonia (VAP): Use of recommended ventilator protocols including suction and oral care every 12 hours with minimal breaks of the circuit; coordination of care between nursing and Respiratory Therapy to prevent VAP

*For background and additional information, see Appendix D and Appendix E.

San Juan Regional Medical Center

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

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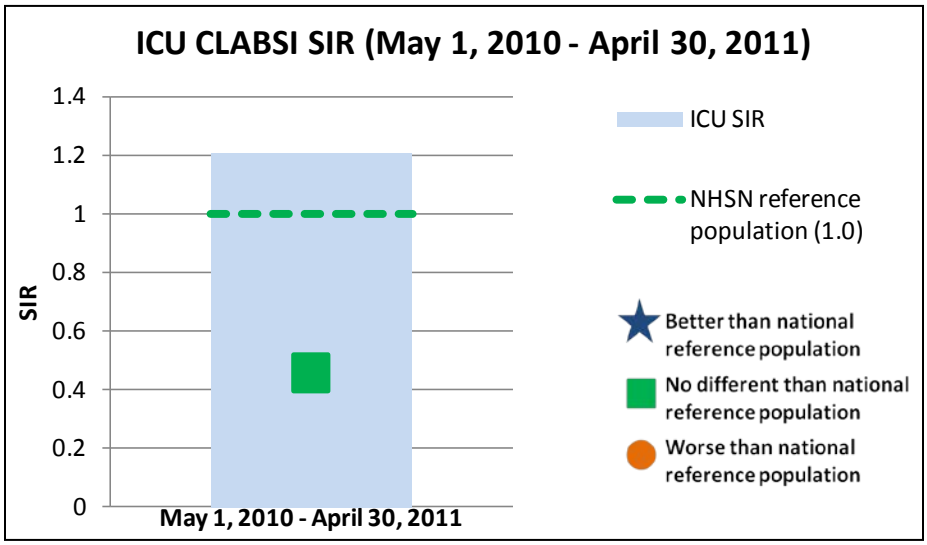

ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR	95% confidence interval	Comparison between facility ICU SIR and NHSN reference population (1.0)
1	ICU	3	2.49	1.21	0.33, 3.11	No different

Healthcare-associated infection (HAI) prevention highlights as reported by San Juan Regional Medical Center

- CAUTI: Added daily needs assessment into documentation and annual staff education
- CLABSI: Ongoing Process Improvement group: Incorporated daily needs assessment, annual education, revised checklist and empowered staff members to "stop the line"; participation in CLABSI Collaborative
- SSI: Implemented and re-emphasized best practices (i.e., preoperative CHG bath for all surgeries, preoperative antibiotic timing)
- Ventilator-associated pneumonia: Ongoing education and prevention efforts include early weaning, head of bed up, and oral care
- CDI: Focus on antibiotic stewardship, soap and water hand wash, environmental cleaning, prompt identification and isolation

*For background and additional information, see Appendix D and Appendix E.

University of New Mexico Hospital

Report on 2010 – 2011 intensive care unit (ICU) central line-associated bloodstream infections (CLABSI)

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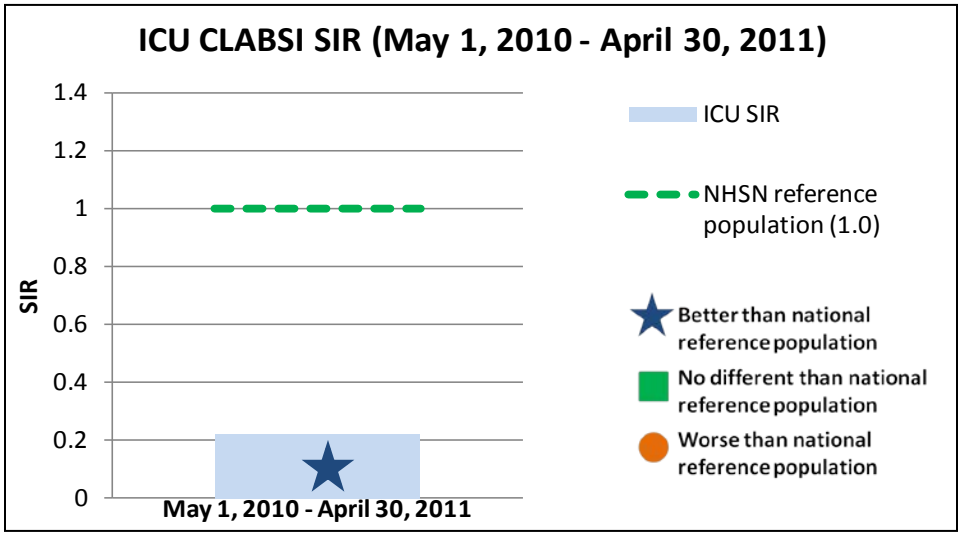


ICU SIR Table (May 1, 2010-April 30, 2011)

Number of units included in SIR calculation	Facility location type	Observed CLABSI infections May 1, 2010-April 30, 2011	Calculated number of predicted CLABSI infections	Facility ICU only SIR	95% confidence interval	Comparison between facility ICU SIR and NHSN reference population (1.0)
4	ICUs	7	31.8	0.22	0.10, 0.41	★ Better

Healthcare-associated infection (HAI) prevention highlights as reported by University of New Mexico Hospital

- NHSN HAI data submission: Ongoing surveillance of MRSA, VAP, SSI, CDI and CLABSI
- CLABSI: Participation in the CLABSI Collaborative; use of central line Bundle; patient education on line maintenance and care; CLABSI Elimination Committee review of insertion, maintenance, and care of central lines and related policies and procedures
- CDI: Participation in upcoming NM CDI initiative
- Ventilator Associated Infections (VAP): Use of the VAP Bundle as a prevention tool
- Hand hygiene surveillance: Ongoing surveillance plus on the spot and continuing education for staff and employees on the importance of hand hygiene
- Infection Control Risk Assessments: Inter-departmental review of construction, renovation, and repair projects to ensure appropriate infection prevention precautions

*For background and additional information, see Appendix D and Appendix E.

Appendix C: New Mexico Healthcare-associated Infections Advisory Committee Members

Member	Role	Voting Member
Baumbach, Joan	NM HAI Prevention Coordinator, NMDOH, Advisory Committee Facilitator	
Bowdey, Lisa	NM HAI Prevention Program Manager, NMDOH	
Brown, Carlene	NM Medical Review Association	√
Connell, Cynthia	Infection Prevention Consultant	
Dye, Jeff	NM Hospital Association	√
Garduño, Trish	NM Hospital Association	
Gillespie, Roger	Division of Health Improvement, NMDOH	√
Interlandi, Ellen	NM Hospital Association	
Jaco, Mary	Large/Urban Facility Infection Preventionist	√
Kellie, Susan	Hospital Epidemiologist/Academic	√
Makvandi, Monear	Infection Prevention/Epidemiologist, NMDOH	√
Minnick, Chris	Public Information Officer, NMDOH	
O'Kelly, Sandra	Small/Rural Facility Infection Preventionist	√
Popejoy, Suzanne	NM APIC Representative	√
Reagan, Julie	Attorney & Healthcare Consultant, Community Member	
Rinaldi, Ophelia	Consumer	√
Sewell, C. Mack	State Epidemiologist, NMDOH	
Stryker, David	SHEA representative	√
Timmins, Anne	NM Medical Review Association	

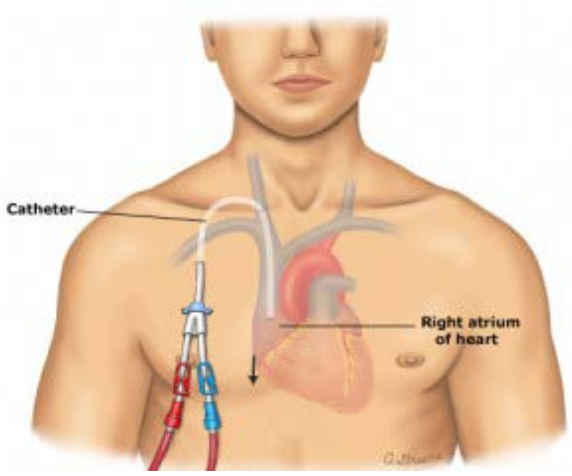
Appendix D: Central Line-associated Bloodstream Infection Surveillance

Background

A CLABSI is a primary bloodstream infection in a patient who had a central line in place at the time of, or within the 48 hour period before, onset of the event.

A central line is a vascular infusion device /catheter that terminates at or close to the heart in one of the great vessels and is used for infusion (e.g., medications), withdrawal of blood, or hemodynamic monitoring. CLABSIs were selected for NM surveillance because of their significant impact on patients' health and also because hospitals can influence these outcomes. CLABSIs can cause patients to become very sick, have prolonged hospital stays, and even die. These infections can lead to high costs for patients and the healthcare system. Evidence-based best practices exist for CLABSI prevention and have shown significant impact on infections in recent years.

Figure 4. Diagram of central line



Acute healthcare facilities in NM that are voluntarily submitting CLABSI data do so by entering both monthly denominator data (i.e., central line days) and specific numerator data (i.e., CLABSI event data) into NHSN. For each reporting unit, facilities collect the number of patient days, the number of central line days, and the number of CLABSI events. The central line days are counted at the same time each day. Each patient with one or more central lines at the time the count is performed is considered one central line day. A CLABSI event refers to a bloodstream infection occurring in a patient with a central line in place and meeting a number of additional criteria which assess relation to other infection sources. A CLABSI event reported in NHSN meets specific surveillance definitions which are designed to be applied in a standardized fashion for all cases. At times the surveillance determination may differ from the clinical determination about the cause or type of infection being treated.

NMDOH is able to view and analyze data in NHSN only for facilities that actively confer rights to the NMDOH HAI Reporting Group, a network of facilities submitting data for

public reporting and prevention purposes. Facilities voluntarily submitting data for CLABSI and for CDI have allowed NMDOH access to this information for the specific purposes of surveillance and related public reporting.

Data submitted to NHSN for CLABSI by facilities that have conferred rights to NMDOH undergo a routine monthly review by NMDOH. All CLABSI events entered into NHSN are reviewed to determine appropriate application of NHSN CLABSI surveillance definitions. Facilities are encouraged to consult with NMDOH and NHSN personnel to review suspect CLABSI cases. Data quality checks are performed against the denominator data submitted. Wide fluctuations in those data can be an indication of errors because numbers of patient days and central line days are relatively similar from month to month. Patient days and central line days are also reviewed to ensure that the number of central line days do not exceed patient days. This is part of the prospective process of data validation (ensuring that information reported is accurate and true) which has been in place during the three years of CLABSI data submission to NHSN for NM public reporting.

Technical Explanations

In the NM HAI 2010 Report, and in the previous pilot report, CLABSI information from facilities submitting data was reported as an aggregate rate of infections per 1,000 central line days. NM HAI Advisory Committee chose to report CLABSI data as a SIR in 2011 for consistency with CLABSI reporting nationally. Healthcare facilities providing CLABSI data to CMS as part of Inpatient Quality Reporting (IQR) for hospitals participating in Inpatient Prospective Payment Systems (IPPS) incentive program will have their data publicly reported through Hospital Compare beginning in late 2011 or early 2012. At this time, it is expected that NHSN will report these data to Hospital Compare in the form of a SIR for each facility.

Risk adjustment of CLABSI data is a method used by NHSN to “level the playing field” when reporting patient outcomes[8,9] It adjusts for potential differences in patient populations and their underlying risk. The way in which NHSN allows for individual hospitals to compare their data with national outcomes is by establishing definitions for specific unit types. Hospitals use these definitions to classify their units in a standardized fashion thereby limiting comparison to national patient populations with similar risk factors. For example, adult ICU data is compared to data from other adult ICUs and pediatric ward data is compared to data from other pediatric wards.

Because data from all patients for all times at a given healthcare facility cannot be obtained (i.e., a hospital’s true population data), it is conventional to use statistical procedures to estimate various measurements. Ninety-five percent confidence intervals are used to describe the variability around an estimate. The confidence intervals (CIs) that are used in this public report provide the range within which the true value will fall 95% of the time. Confidence intervals use statistics to calculate upper and lower limits for the infection rates. This range indicates that the true value lies somewhere between the upper and lower limits.

An additional statistical test reported is that of the p-value which tells the statistical significance of a result. This report considers a p-value of $p < 0.05$ statistically significant.

Appendix E: Standardized Infection Ratio

Background on the SIR

The standardized infection ratio (SIR) is a summary statistic used to compare the HAI experience of a particular group to a reference population. This comparison provides a 'predicted' or 'expected' number of infections for any particular hospital or unit within that hospital by looking at the experience of a large number of similar hospitals and inpatient units nationally. SIR is similar to standardized mortality ratio (SMR) which compares the number of observed deaths to the number of expected deaths.

A SIR allows facilities and/or units to compare the number of 'observed' HAI events (which in this case is infections reported to NHSN from their facility) to the number of 'predicted' HAI events. The number of predicted events is calculated based on the reference population. When using SIR to report CLABSI data, the reference population is the NHSN 2006 – 2008 pooled mean for the comparable facility or unit type. The calculation is risk-adjusted and allows results for individual units to be combined (i.e., into a facility aggregate) without further risk adjustment. A SIR can also be used at a state level to calculate a state-wide SIR based on reporting units and their varying risk categories.

Using the SIR to Compare Data

SIRs can be calculated at a facility or unit level. SIRs can track trends over time in single units or large groups and will also reflect changes in risk over time.

Interpreting the SIR

The SIR is a ratio and is typically compared to one. A SIR less than one indicates that the number of observed HAI events is fewer than the number predicted. A SIR equal to one indicates that the number of observed events is the same as the number predicted, and a SIR greater than one indicates the number of observed events is greater than predicted. In this case, the predicted number is calculated from the risk-adjusted NHSN 2006 – 2008 pooled mean multiplied by the unit's actual number of central line days.

Benefits of the SIR

A benefit of using SIR is that when combining units into a facility SIR, or facilities into a state SIR, patient mix and other risk factors are incorporated in the calculation. Another benefit of SIR is that the historical pooled mean (2006 – 2008) used as the reference population predates the widespread implementation of evidence-based CLABSI prevention measures. 'One' is therefore a baseline against which progress can be measured.

Limitations to the SIR

The reference population is based on data submitted nationally to NHSN from 2006 – 2008 which is not the same time period as the observed events included in this NM report. NHSN data is not available for real-time comparison.

SIR calculations are not meant to be compared against each other or ranked. SIRs are only valid when compared to one (the reference population) or internally (in order to trend over time for a specific unit, a facility or a state aggregate).

Understanding the Relationship between HAI Rate and SIR Comparison Metrics[10]

CLABSI Risk Adjustment

Historically, NHSN has published CLABSI rates based on the number of CLABSIs per 1,000 central line-days by type of ICU and other locations. This scientifically sound risk-adjustment strategy creates a practical challenge to summarizing this information nationally, regionally, or even for an individual healthcare facility across multiple patient care locations. For instance, when comparing CLABSI rates, there may be 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 changes over time. This raises the need for a way to combine CLABSI rate data across location types to communicate the status of HAI incidence and prevention success to hospital staff, public health officials, and potentially consumers.

An SIR is identical in concept to an SMR 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

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

95%CI = (0.628,0.989)

*defined as the number of CLABSIs per 1,000 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 a “predicted” number using the CLABSI rates from the standard population. This “predicted” number, which can also be understood as a prediction or projection, is calculated by multiplying the national CLABSI rate from the standard population by the observed number of central line days for each stratum. 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-percent 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. In the above example, many more rows of data for each patient location could be added for any facility, and rows of data for all facilities in any state. Always though, the type of patient location is mapped to the appropriate type of patient location from the standard population to maintain the

risk adjustment (the patient locations are defined in the annual NHSN report). Thus, the SIR provides a single metric for performing comparisons rather than attempting to perform multiple comparisons across many strata utilizing rates, which makes the task cumbersome. For instance, if a hospital has 10-15 different patient locations, it can be very difficult to get a sense of whether the overall performance is better or worse than desired; summarizing these data at the state level, where 30-40 different location types may be present, would be impossible. 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 CLABSIs outlined in the HHS Action Plan to Reduce HAIs (www.hhs.gov/ophs/initiatives/hai/actionplan/index.html) uses 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-percent reduction goal was met. There are statistical methods that allow for calculation of CIs, hypothesis testing, and graphical presentation using this HAI summary comparison metric called the SIR.

Appendix F: Healthcare Personnel Influenza Vaccination Surveillance

Background

Influenza vaccination of HCP was selected as an indicator because it is a critical patient safety measure endorsed by CDC, The Joint Commission (TJC) and many professional organizations.[11] People infected with influenza can pass it to others even before they start to become ill. Therefore, asymptomatic HCP can transmit influenza to their patients. Healthcare facility-associated influenza outbreaks have been described in studies.[12] In past years, healthcare-associated influenza infections have been documented in healthcare settings and HCP have been implicated as the potential source of these infections.[13] Increased influenza vaccination rates are associated with decreased mortality in elderly patients (e.g., patients in long-term care settings) [14],[15] and decreased HCP lost work time[16],[17]

HCP are aware that they should be vaccinated against influenza: in a survey of HCP conducted by CDC in March 2011, over 90% identified HCP as a group for whom influenza vaccine is recommended. Over half of respondents indicated that the chance of getting influenza if unvaccinated was very high or somewhat high.[18]

Methods to improve HCP influenza vaccination rates should include education about vaccine safety and the ability of influenza vaccination to prevent flu as well as other evidence-based approaches such as offering free or reduced-price vaccine to HCP at their workplace.[19]

Despite HCP being aware that they should be vaccinated and facilities employing methods to improve vaccination rates, a 2009 survey conducted by University HealthSystem Consortium, (a collection of academic medical centers and their affiliated hospitals) found even the best performing organizations rarely exceed 70% influenza vaccination.[20]

Data Submission Process

During the 2010 – 2011 influenza season, CDC utilized a time-limited National Quality Forum (NQF) endorsed quality measure (measure 0431) to conduct a pilot that tracked HCP influenza vaccination in a variety of healthcare settings in four states. The influenza season is generally considered to span the Fall of one year to the Spring of the next (e.g., 2010-2011). CDC invited NM to be one of the sites to participate in the pilot to test this NQF quality measure due to NM's experience collecting HCP influenza vaccination data and interest in using NHSN as a data collection tool. The technical workgroup of the NM HAI Advisory Committee recommended adopting the NQF pilot measure for all facilities submitting HCP influenza vaccination data to NMDOH for the 2010 – 2011 influenza season.

NM assisted in the development of the multi-site pilot data collection and validation protocols and contributes to the CDC HCP Influenza Vaccination Pilot Steering Committee. The pilot used simplified data collection methods similar to those used by NM healthcare facilities during recent influenza seasons. The pilot objective is to determine if the HCP groups and proposed ways of categorizing vaccination status can be realistically collected by various types of healthcare facilities. Personnel and vaccination categories used in the pilot were more comprehensive than the categories

used in NM in previous influenza seasons. Findings of this pilot will be presented in Fall 2011 after completion of validation activities.

NM healthcare facilities submitting HCP influenza vaccination data for the 2010 – 2011 flu season included acute care hospitals and state long-term care facilities. The 24 facilities which had previously participated in public reporting of HCP influenza vaccination rates are included in the facility-specific data below. A few of these facilities did not participate in the CDC pilot project. Facilities with prior reporting experience were encouraged--but not required--to participate in the CDC pilot project.

To maintain continuity of previous data and acknowledge the barriers facilities may encounter while collecting HCP vaccination data in the new categories, the decision was made to publicly report facility-specific data only for the category most similar to the historically collected categories during the 2009 – 2010 influenza vaccination season.

Appendix G: *Clostridium difficile* Infection Surveillance

Background

Clostridium difficile (*C. difficile*) is an anaerobic spore-forming bacillus which can cause a range of disease from asymptomatic carriage (i.e., when an individual carries a pathogen without symptoms) to mild diarrheal illness to colitis (i.e., inflammation of the colon), and even death. Illness from *C. difficile* most commonly affects older adults in hospitals or in long-term care facilities and typically occurs after use of antibiotic medications. In recent years, these infections have become more frequent, more severe and more difficult to treat.

C. difficile is spread via the fecal-oral route (i.e., when pathogens transmitted in fecal particles from one host are introduced into the oral cavity of another host) with spores surviving in the environment for many months. The spores are highly resistant to routine cleaning and disinfection. In healthcare settings two main sources of spores exist: infected or colonized (i.e., when microorganisms become established on a person) patients and contaminated inanimate objects. The incubation period (i.e., the time from exposure to an infectious agent until signs and symptoms of the disease appear) is unknown and patients who are colonized can be asymptomatic for weeks to months but may develop symptoms once exposed to antibiotics which kill off normal gastrointestinal flora (i.e., bacteria normally residing within the body) allowing the *C. difficile* to grow and cause disease.

CDI has been increasing in incidence (i.e., the number of newly diagnosed cases during a specific time period) and virulence (i.e., a measure of the severity of the disease a microorganism is capable of causing) over the last one to two decades, with an increase in mortality from 5.7 per million population in 1999 to 23.7 per million in 2004.[21] One source estimated the attributable cost of CDI to be $2,454-$5,042 per case.[22] Patients with *C. difficile* in one study experienced higher rates of readmission to the hospital within six months (52% versus 23% among patients without CDI) and longer hospital stays (2.8 days attributable to CDI). These patients were also more likely to be discharged to a long-term-care facility versus home or a non-healthcare setting when compared with non-*C. difficile* patients.

Due to the increasing burden of disease and in anticipation of new federal reporting requirements, the NM HAI Advisory Committee voted to include CDI reporting via NHSN and create a prevention collaborative to address the multi-factorial issues associated with CDI. CDI LabID events were reported by 17 units in 11 hospitals for at least four months from November 2010 through April 2011.

Data Submission

A CDI LabID event is a proxy measure of multi drug-resistant organism (MDRO) infection, exposure and healthcare acquisition. This relies exclusively on clinical microbiology data to identify events and patient admission/transfer information within the facility to categorize the laboratory result. The only labs included in LabID events are clinical specimens, those taken for purpose of treatment or diagnostic purposes, in contrast to active surveillance testing which screens all patients for a pathogen.

Appendix H: Special Projects

HAI and Antimicrobial Use Prevalence Survey

Background and Methods

While HAI surveillance is often conducted for specific HAI at both the state and national levels, there is limited data on overall prevalence of HAI and antimicrobial use in the US. The objectives of the HAI and Antimicrobial Use Prevalence Survey are to estimate HAI prevalence among inpatients in acute healthcare facilities (i.e., hospitals), determine distribution of HAI by pathogen and major infection site, and to estimate prevalence and describe rationale for antimicrobial use in acute healthcare facilities. There are three phases to this project: 1) single-city pilot, 2009; 2) limited roll-out, 2010; and 3) full-scale survey, 2011. This project is currently in phase 3 (full-scale survey). For this phase, each state randomly selected and recruited facilities to participate in a single day survey during May, June, or July 2011. Twenty facilities in NM are participating in this survey. Institutional Review Board (IRB) approval was obtained at the state level as well as from the participating facilities as needed. Eligible patients for the survey are acute care inpatients of any age in randomly selected beds on the morning of the survey. Facilities are sampling up to 100 patient records, depending on the size of the facility. Surveys have begun in NM. For those patients determined to be on antimicrobials on the survey date or day prior to the survey date, detailed medical record reviews will be conducted to determine the rationale for antimicrobial use and if there is any evidence of HAI.

All data will be entered into a web-based, password protected data management system designed by CDC for this project. The data submitted to CDC will not contain any unique patient identifiers (e.g., patient name). Upon completion of data submission, CDC will perform aggregated data analysis to generate prevalence estimates of HAI and antimicrobial use. Logistic regression will be used to assess variables associated with HAI and antimicrobial use.

Findings

The phase 2 HAI and Antimicrobial Use Prevalence Survey was conducted in 22 acute care general hospitals across the ten EIP states. A total of 2015 patients were included in the phase 2 survey. Among the 2015 patients, 136 HAI were identified (6.8%, 95% CI: 5.7-7.9). The 136 HAI were found in 116 patients. Although ICU locations made up only 14% of the locations in which surveyed patients were located, they made up 43.5% of the locations to which HAI were attributed. Pneumonia and surgical site infections were two most prevalent HAI and these comprised 52.9% of all HAI detected. Antimicrobials were scheduled or administered on the survey date or the prior calendar day for 1009/2015 patients (50.1%, 95% CI: 47.9- 52.3).Treatment of active infection was the most common rationale cited for antimicrobial use, followed by surgical prophylaxis (i.e., prevention of or protection from disease). Further data analysis is being conducted by CDC and results will be reported once available. As phase 3 is just in the early stages of data collection, there are no specific results to report at this time.

Denominator Simplification Project

Background and Methods

Collection of denominator data is an essential part of HAI surveillance in order to calculate infection rates. However, denominator data collection is often time intensive and can consume human resources that could be utilized for other infection prevention efforts. The objectives of the NHSN Denominator Simplification Project are to: 1) evaluate use of a simple, less labor intensive method for estimating device-days denominator data; 2) determine if denominator sampling methods can be successfully implemented; and 3) determine if denominator sampling methods can generate valid estimates of device-days. The expected benefits of this project are to validate sampling methodology which could then contribute to reduction in HAI surveillance data collection burden, increased HAI surveillance participation, and improve denominator data reliability and accuracy.

This project has two phases: 1) retrospective data collection; and 2) prospective data collection. The data collection for this project does not involve collection of any unique patient identifiers or confidential patient information and therefore is not considered to be human subjects research. Participating facilities must be enrolled in NHSN and conducting CLABSI surveillance. The retrospective phase involved facility IPs providing 6-12 consecutive months of monthly device-days (i.e., central line) denominator worksheets. This data is being used by CDC to retrospectively assess the feasibility of using sampling methods to obtain estimates of central line-days in both ICU and non-ICU settings. The data collection for this phase was completed in the fall of 2010. Five facilities in New Mexico participated in this phase.

The prospective phase began in January 2011 and involves facilities continuing to collect denominator data using current methods for 12 consecutive months while also conducting independent sampling (one day per week) of denominator data from the same inpatient units. Eight facilities in New Mexico are participating in this phase. This phase will allow for prospective assessment of the feasibility of implementing the use of sampling methods to collect patient-days and central line-days denominator data. In addition, this phase will provide data to compare estimates of central line-days derived from data collected using sampling methodology against data collected using current denominator data collection practices. This comparison will determine if estimates of central line-days and CLABSI rates generated are suitable for the purposes of conducting HAI surveillance and submitting data to NHSN. All data analysis will be performed by CDC.

Findings

Preliminary analyses have been conducted by CDC for the phase 1 (retrospective) NHSN denominator simplification project. Between September and December 2010, 65 ICUs (55% medical/surgical) in 45 facilities submitted a total of 688 months of CLABSI denominator data (mean 10.6 months/unit). For 90% of units, the estimated CLABSI rate was no more than -0.06 to +0.14 CLABSI per 1,000 central line days from the actual CLABSI rate. These preliminary results from a variety of ICU types suggest that once weekly denominator data sampling is a viable alternative to manual daily collection. Further analysis will be conducted to assess the feasibility of weekly denominator data collection. Weekly denominator data collection would substantially reduce the data collection burden and increase the efficiency of CLABSI surveillance.

CLABSI Data Validation Project

Background and Methods

Data validation is a key element to assure quality, accuracy, and reliability of public reports. This means that the data presented are “true.” New Mexico has been working to ensure validation of CLABSI data submitted to NHSN using prospective monthly denominator data quality checks and active monitoring and review of all CLABSI events entered by facilities that have conferred rights to the HAI Reporting Group. In addition, facilities are encouraged to consult with NMDOH and NHSN personnel to review suspect CLABSI cases. NMDOH-sponsored CLABSI surveillance trainings have been held periodically for participating facilities. These trainings included presentations of NHSN definitions and case studies in order to help ensure proper application of CLABSI definitions and appropriate NHSN data submission.

The objective of this additional CLABSI validation project is to conduct a detailed retrospective review of positive blood cultures that occurred among individuals in NM hospital ICUs to determine if CLABSI events were properly ascertained, defined and reported to NHSN. During December 2010 – April 2011, a review was conducted of medical records of individuals admitted during November 2009 – March 2010 to nine adult ICUs of six New Mexico hospitals. These were the six hospitals participating in the pilot project to collect and submit CLABSI event data to NMDOH and NHSN. Medical records were selected for review based on obtaining all positive blood culture results with collection dates during the evaluation time period from participating hospital microbiology laboratories and matching those results with line lists of individuals admitted to participating ICUs during November 1, 2009 through March 31, 2010.

Retrospective chart reviews were conducted by two contracted auditors using standardized data collection instruments. Medical record reviews, data collection and CLABSI determinations were conducted independently without sharing of information between reviewers. Chart auditors were also blinded as to whether the patients had previously been determined by the facility to have a CLABSI and if the case had been entered into NHSN. All definitions used for determining the presence of HAI were based on the CDC NHSN Surveillance Protocol. If an auditor was unable to determine if a positive blood culture met criteria for a CLABSI event, an expert reviewer with training in NHSN definitions reviewed the case. Consultation with NHSN experts was also utilized as needed.

Findings

Data from the CLABSI validation project are currently being analyzed. Findings from this project will be reported separately.

Appendix I: Consumer Healthcare-associated Infections Prevention Information

In addition to national and state level efforts to reduce and prevent HAI, there are steps that everyone can take to decrease the risk of HAI. Patients and those near to them can educate themselves about HAI and how to prevent them, including being a partner in their care by asking questions of their providers, practicing good hand hygiene and demanding it of others, using antibiotics appropriately, reviewing available data to find out what it means for their care, and becoming involved in opportunities to provide input to improve the quality of healthcare delivery. As consumers of healthcare services, the following are specific steps the public can take to prevent the possibility of getting an HAI.

1. **Educate Yourself**

   Numerous HAI resources are available to help anyone become an educated consumer of healthcare services.

   As a starting point, the CDC HAI website is a resource for learning about the various types of infections and determining what can be done to remain infection free. CDC provides extensive information about the most common types of infections, the pathogens associated with those infections, and resources for the prevention and elimination of HAI. Link to: http://www.cdc.gov/hai/index.html.

   The Society for Healthcare Epidemiology (SHEA) has consumer resource documents on various types of HAI. Patient Safety Guides about the most common types of infections are available for download at: http://www.shea-online.org/ForPatients.aspx.

   The NMDOH HAI website provides information about the consumer role in HAI prevention. Link to: http://nmhealth.org/HAI/public_reports.shtml

   The Institute for Healthcare Improvement (IHI) is also a resource for HAI information. Link to: http://www.ihi.org/IHI/Topics/HealthcareAssociatedInfections/

2. **Become a Partner with your Provider**

   Know what questions to ask. The Agency for Healthcare Research and Quality (AHRQ) can help you get more involved with your healthcare provider by knowing the right questions to ask. Visit the AHRQ “Questions are the Answer” tool to learn important questions to ask to make your healthcare experience a team effort between you and your provider. http://www.ahrq.gov/questionsaretheanswer/

   Be assertive about hand hygiene. Healthcare providers know about the importance of hand hygiene, but sometimes they may forget to wash their hands. Be a partner with your provider by asking your doctor or nurse to wash their hands or use an alcohol-based hand sanitizer. Don't be afraid to speak up. Visitors should also properly clean their hands when visiting a patient in the hospital or other healthcare facility.

   Know the signs and symptoms of infection. Depending on the type of care provided, it is important to know what signs and symptoms of infection to watch for. For example, if you are having a surgical procedure, ask your nurse or

doctor how to properly care for the surgical wound and the signs and symptoms that might indicate that an infection is occurring. If your care calls for the use of a central line, become educated about precautions and care related to the central line as well as signs (e.g., redness or swelling of skin, fever) and symptoms (e.g., soreness at the central line site) of infection.

Be smart about antimicrobials. It's important to learn about the proper uses of antimicrobials. "Antimicrobial" is a general term that refers to a group of drugs that includes antibiotics, antifungals, antiprotozoals and antivirals. Antibiotics will treat bacterial infections, but they won't work against viral infections such as colds, influenza, many sore throats and cough illnesses. The inappropriate use of antibiotics could be harmful to your health in certain situations and has led to the antibiotic resistance of bacteria that are sometimes called "super bugs".

You can be smart about antibiotic use by talking with your healthcare provider about antibiotic resistance. If you are prescribed an antibiotic, take it exactly as your doctor or pharmacist tells you. Do not self-prescribe antibiotics.

Learn more about antibiotic resistance and the proper use of antibiotics by visiting the CDC Get Smart: Know When Antibiotics Work homepage. http://www.cdc.gov/getsmart/index.html.

3. Practice Good Hand Hygiene

Keeping your hands clean by practicing proper hygiene is one of the most important ways to avoid getting sick and spreading germs that can make others sick. Many diseases and conditions are spread by individuals who simply don't wash their hands.

- Practice hand hygiene by washing with soap and clean running water, continuously rubbing of your hands for a minimum of 20 seconds: you can time this by humming the "Happy Birthday" song twice. If your hands are not visibly soiled and soap and water are not available, use an alcohol-based hand sanitizer. CDC provides educational resources to help you learn how to wash your hands the right way and information on hand sanitizers. Link to: http://www.cdc.gov/handwashing/

4. Review the Available Data

Numerous resources are available to find HAI data. This 2011 New Mexico Annual Report is the first NM report to provide hospital-specific information about CLABSI. Other resources are available for finding information on publicly reported HAI data. A primary source for hospital data is Medicare Hospital Compare that can be accessed at: http://www.hospitalcompare.hhs.gov.

Many other states also provide state healthcare facility-specific data for various infection types. Although the format may vary, most states will offer HAI data through a state Department of Health website, an annual report, or a searchable database.

Interpreting the data: There are limitations to HAI data. As an example, when tracking changes in HAI rates, it is not unusual to find an increase in rates prior to improvement.[23] This increase has been attributed to improved tracking methods and application of HAI surveillance definitions which can lead to identification of previously untracked HAI. When reviewing publicly reported HAI data, it is important to consider additional factors that might affect facility

performance rates such as size, type of patients, level of care provided and other unique characteristics such as being a teaching hospital. HAI data collection methods and definitions are evolving and, as such, inconsistencies in results may be observed over time simply as a result of these changes. Data is just one of several indicators of what is happening in healthcare settings. Seeing that your providers are following prevention guidelines and discussing HAI with them are additional steps to take.

5. **Become Involved**

   Consider joining a patient advisory board at your local hospital or look for other opportunities to provide input on healthcare standards and access to quality care.

What You Can Do – Central Lines

If you or someone close to you is going to have a central line placed, ask if the healthcare facility uses a central line insertion checklist (i.e., catheter checklist to ensure adherence to infection prevention practices at the time of insertion of central venous catheters) and what other measures they have in place to prevent CLABSI. Encourage everyone visiting you to perform hand hygiene. Do not be afraid to ask physicians, nurses or others involved in your care to wash their hands, particularly before accessing the central line. Follow healthcare provider instructions for keeping your wound clean and let your care takers know if the site becomes red or irritated or the bandages come off. Remember to ask people to wash their hands and wear gloves before accessing your line and ask visitors not to touch the line.

What You Can Do – Influenza Vaccination

A flu shot is the single best way to prevent seasonal influenza. Getting your vaccination annually will help protect you and your family. If you have a medical condition (e.g., asthma, diabetes, chronic obstructive pulmonary disease (COPD)) or a weakened immune system, discuss your flu shot with your provider. Good respiratory hygiene habits such as covering your coughs and sneezes, avoiding touching your mouth and eyes with your hands and frequent hand washing or use of alcohol hand gel can also minimize the transmission of respiratory viruses like influenza. If you feel ill, it is recommended that you stay home and reduce your contact with others. You can also ask your healthcare provider if they have gotten their flu shot.

What You Can Do – *Clostridium difficile* Infection

Preventing CDI is a group effort which involves a multidisciplinary team in the healthcare setting and you. As a patient or visitor to a hospital, you should wash your hands often and avoid bringing in extra belongings to reduce clutter. Cluttered countertops may not be cleaned as often or as thoroughly as recommended. Healthcare personnel should also be reminded to wash their hands using soap and water before caring for you or your loved one. Practice responsible antimicrobial usage, taking only antimicrobials prescribed by your doctor until you complete the treatment, and don't pressure physicians to prescribe antibiotics. If someone you know is diagnosed with CDI and you visit them in the hospital, be sure to follow any guidelines the facility recommends and wash your hands often.

General resources on HAI

Consumer information about HAIs, including those not addressed in this report, can be found through various online resources:

- New Mexico Department of Health, Healthcare-associated (HAI) Definitions and Links
- Centers for Disease Control and Prevention, Healthcare-associated Infections (HAIs)
- Association for Professionals in Infection Control and Epidemiology, Educational Brochures
- The Joint Commission, Speak Up: Five Things You Can Do to Prevent Infection
- The Society for Healthcare Epidemiology of America, Patient Resources

The Centers for Disease Control and Prevention (CDC) has additional resources for consumers about CLABSI and CDI:

- Central Line-associated Bloodstream Infections: Resources for Patients and Healthcare Providers.
- Patients with Central Lines -- What You Need to Know to Avoid a Bloodstream Infection (video).
- FAQs about Catheter-associated Bloodstream Infections.
- Clostridium *difficile* Infection
- FAQs about Clostridium *difficile*

The following two pages contain information for consumers on CLABSI and CDI.

FAQs
(frequently asked questions)

SHEA
The Society for Healthcare Epidemiology of America

"Catheter-Associated Bloodstream Infections"
(also known as "Central Line-Associated Bloodstream Infections")

What is a catheter-associated bloodstream infection?

A "central line" or "central catheter" is a tube that is placed into a patient's large vein, usually in the neck, chest, arm, or groin. The catheter is often used to draw blood, or give fluids or medications. It may be left in place for several weeks. A bloodstream infection can occur when bacteria or other germs travel down a "central line" and enter the blood. If you develop a catheter-associated blood-stream infection you may become ill with fevers and chills or the skin around the catheter may become sore and red.

Can a catheter-related bloodstream infection be treated?

A catheter-associated bloodstream infection is serious, but often can be successfully treated with antibiotics. The catheter might need to be removed if you develop an infection.

What are some of the things that hospitals are doing to prevent catheter-associated bloodstream infections?

To prevent catheter-associated bloodstream infections doctors and nurses will:

- Choose a vein where the catheter can be safely inserted and where the risk for infection is small.
- Clean their hands with soap and water or an alcohol-based hand rub before putting in the catheter.
- Wear a mask, cap, sterile gown, and sterile gloves when putting in the catheter to keep it sterile. The patient will be covered with a sterile sheet.
- Clean the patient's skin with an antiseptic cleanser before putting in the catheter.
- Clean their hands, wear gloves, and clean the catheter opening with an antiseptic solution before using the catheter to draw blood or give medications. Healthcare providers also clean their hands and wear gloves when changing the bandage that covers the area where the catheter enters the skin.
- Decide every day if the patient still needs to have the catheter. The catheter will be removed as soon as it is no longer needed.
- Carefully handle medications and fluids that are given through the catheter.

What can I do to help prevent a catheter-associated bloodstream infection?

- Ask your doctors and nurses to explain why you need the cath-eter and how long you will have it.
- Ask your doctors and nurses if they will be using all of the pre vention methods discussed above.
- Make sure that all doctors and nurses caring for you clean their hands with soap and water or an alcohol-based hand rub before and after caring for you.

If you do not see your providers clean their hands, please ask them to do so.

- If the bandage comes off or becomes wet or dirty, tell your nurse or doctor immediately.
- Inform your nurse or doctor if the area around your catheter is sore or red.
- Do not let family and friends who visit touch the catheter or the tubing.
- Make sure family and friends clean their hands with soap and water or an alcohol-based hand rub before and after visiting you.

What do I need to do when I go home from the hospital?

Some patients are sent home from the hospital with a catheter in order to continue their treatment. If you go home with a catheter, your doctors and nurses will explain everything you need to know about taking care of your catheter.

- Make sure you understand how to care for the catheter before leaving the hospital. For example, ask for instructions on shower-ing or bathing with the catheter and how to change the catheter dressing.
- Make sure you know who to contact if you have questions or problems after you get home.
- Make sure you wash your hands with soap and water or an alcohol-based hand rub before handling your catheter.
- Watch for the signs and symptoms of catheter-associated blood-stream infection, such as soreness or redness at the catheter site or fever, and call your healthcare provider immediately if any occur.

If you have additional questions, please ask your doctor or nurse.

American Hospital Association

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FAQs
(frequently asked questions)

SHEA
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about

"Clostridium Difficile"

What is Clostridium difficile infection?

Clostridium difficile [pronounced Klo-STRID-ee-um dif-uh-SEEL], also known as "*C. diff*" [See-dif], is a germ that can cause diarrhea. Most cases of *C. diff* infection occur in patients taking antibiotics. The most common symptoms of a *C. diff* infection include:

Watery diarrhea
Fever
Loss of appetite
Nausea
Belly pain and tenderness

Who is most likely to get C. diff infection?

The elderly and people with certain medical problems have the greatest chance of getting *C. diff. C. diff* spores can live outside the human body for a very long time and may be found on things in the environment such as bed linens, bed rails, bathroom fixtures, and medical equipment. *C. diff* infection can spread from person-to-person on contaminated equipment and on the hands of doctors, nurses, other healthcare providers and visitors.

Can C. diff infection be treated?

Yes, there are antibiotics that can be used to treat *C. diff.* In some severe cases, a person might have to have surgery to remove the infected part of the intestines. This surgery is needed in only 1 or 2 out of every 100 persons with *C. diff.*

What are some of the things that hospitals are doing to prevent C. diff infections?

To prevent *C. diff.* infections, doctors, nurses, and other healthcare providers:

- Clean their hands with soap and water or an alcohol-based hand rub before and after caring for every patient. This can prevent *C. diff* and other germs from being passed from one patient to another on their hands.
- Carefully clean hospital rooms and medical equipment that have been used for patients with *C. diff*.
- Use Contact Precautions to prevent *C. diff* from spreading to other patients. Contact Precautions mean:
  - Whenever possible, patients with *C. diff* will have a single room or share a room only with someone else who also has *C. diff*.
  - Healthcare providers will put on gloves and wear a gown over their clothing while taking care of patients with *C. diff*.
  - Visitors may also be asked to wear a gown and gloves.
  - When leaving the room, hospital providers and visitors remove their gown and gloves and clean their hands.
  - Patients on Contact Precautions are asked to stay in their hospital rooms as much as possible. They should not go to common areas, such as the gift shop or cafeteria. They can go to other areas of the hospital for treatments and tests.
- Only give patients antibiotics when it is necessary.

What can I do to help prevent C. diff infections?

- Make sure that all doctors, nurses, and other healthcare providers clean their hands with soap and water or an alcohol-based hand rub before and after caring for you.

If you do not see your providers clean their hands, please ask them to do so.

- Only take antibiotics as prescribed by your doctor.
- Be sure to clean your own hands often, especially after using the bathroom and before eating.

Can my friends and family get C. diff when they visit me?

C. diff infection usually does not occur in persons who are not taking antibiotics. Visitors are not likely to get *C. diff.* Still, to make it safer for visitors, they should:

- Clean their hands before they enter your room and as they leave your room
- Ask the nurse if they need to wear protective gowns and gloves when they visit you.

What do I need to do when I go home from the hospital?

Once you are back at home, you can return to your normal routine. Often, the diarrhea will be better or completely gone before you go home. This makes giving *C. diff* to other people much less likely. There are a few things you should do, however, to lower the chances of developing *C. diff* infection again or of spreading it to others.

- If you are given a prescription to treat *C. diff,* take the medicine exactly as prescribed by your doctor and pharmacist. Do not take half-doses or stop before you run out.
- Wash your hands often, especially after going to the bathroom and before preparing food.
- People who live with you should wash their hands often as well.
- If you develop more diarrhea after you get home, tell your doctor immediately.
- Your doctor may give you additional instructions.

If you have questions, please ask your doctor or nurse.

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Appendix J: Acronyms

AHRQ	Agency for Healthcare Research and Quality
AMA	American Medical Association
APIC	Association for Professionals in Infection Control and Epidemiology
ARRA	American Recovery and Reinvestment Act
CAUTI	Catheter-associated urinary tract infection
CI	Confidence interval
CDI	Clostridium difficile infection
CDC	Centers for Disease Control and Prevention
CLABSI	Central line-associated bloodstream infection
CMS	Centers for Medicare and Medicaid Services
CUSP	Comprehensive Unit-based Safety Program
DHQP	Division of Healthcare Quality Promotion
EIP	Emerging Infections Program
HAI	Healthcare-associated infection/s
HCP	Healthcare personnel
HHS	Department for Health and Human Services
IP	Infection Preventionist
ICU	Intensive care unit
MRSA	Methicillin-resistant *Staphylococcus aureus*
NHSN	National Healthcare Safety Network
NM	New Mexico
NMDOH	New Mexico Department of Health
NMHA	New Mexico Hospital Association
NMMRA	New Mexico Medical Review Association
NQF	National Quality Forum
SHEA	Society for Hospital Epidemiology of America
SIR	Standardized infection ratio
SSI	Surgical site infection
TJC	The Joint Commission
US	United States
WHO	World Health Organization

Appendix K: Glossary

Antimicrobial stewardship: A program which seeks to optimize antimicrobial (e.g., antibiotic, antiviral) prescribing through selecting an appropriate drug and optimizing its dose and duration in order to cure an infection and improve individual patient care as well as reduce healthcare facility costs and slow the spread of antimicrobial resistance.

Bundle: A group of procedures related to insertion of a central line that include hand washing, insertion site sterilization, full body drape, use of hat, mask and sterile gown by HCP, and selection of optimal insertion site; also used in referring to other groups of processes that are most effective when "bundled" together in a particular order.

Asymptomatic carriage: The condition or state of carrying a pathogen (e.g., bacteria) within the body without causing an infection with symptoms.

Central line-associated bloodstream infection (CLABSI): A primary bloodstream infection (BSI) in a patient that had a central line or umbilical catheter in place at the time of, or within the 48-hour period before onset of the event (i.e., symptoms or positive blood culture).[24]

***Clostridium difficile* (also commonly called '*C. diff*' or *C. difficile*):** A bacterium that results in a gastrointestinal illness. Symptoms can range from diarrhea to life-threatening inflammation of the colon. *Clostridium difficile* infection (CDI) most commonly affects older adults in hospitals or long-term care facilities. Patients taking antibiotics are at risk of becoming infected with *C. difficile*. *C. difficile* is recognized as one of the most common causes of healthcare-associated diarrhea.

Colitis: An inflammatory condition of the colon (large intestine).

Colonize: When microorganisms become established on a host (e.g., person); these bacteria can then be spread to other parts of the body or to others.

Confidence interval (CI): A CI describes the range of values consistent with the actual data. CIs provide a measure of the level of precision (a wide CI reflects a large amount of variability or imprecision and a narrow CI reflects little variability and high precision) and significance of a result by providing lower (minimum) and upper (maximum) limits for the calculated result. The null hypothesis is a statistical hypothesis that states that there are no differences between observed and expected data: a CI that includes 1.0 is consistent with the null hypothesis. Conversely, a CI that does not include 1.0 indicates that the result is significant. For example, a CLABSI rate of 1.5 with a 95% CI of 0.8 – 2.0 indicates that 95% of the time the minimum CLABSI rate is 0.8 and the maximum CLABSI rate is 2.0; this result is not significant because the CI includes 1.0. On the other hand, a CLABSI rate of 1.5 with a 95% CI of 1.2 – 3.0 indicates that 95% of the time the minimum CLABSI rate is 1.2 and the maximum CLABSI rate is 3.0; this result is significant because the CI does not include 1.0.

Denominator: The lower portion of a fraction used to calculate a rate or ratio (e.g., for the fraction ¾, the denominator is 4). In a rate, the denominator can be the population at risk. When calculating CLABSI rates, the denominator is the total central line days for the hospital unit.

Fecal oral route: A route of disease transmission when pathogens in fecal particles from one host are introduced into the oral cavity of another potential host. The fecal particles are generally not visible. Transmission can occur by eating food that was contaminated by an infected person who did not wash their hands well after using the

bathroom, or by having contact with contaminated persons or objects and not washing your hands before touching your mouth or eyes.

Flora: The bacteria normally residing within the body (e.g., intestine).

Healthcare-associated infection (HAI): A localized or systemic condition that: a) results from an adverse reaction to the presence of an infectious agent or its toxin; and b) was not present or incubating at the time of admission to the healthcare facility. (CDC, The National Healthcare Safety Network Manual: Patient Safety Component Protocol, January, 2008.)

Healthcare personnel: Worker with direct patient contact and working in essential services needed to maintain healthcare services (e.g., dietary, housekeeping, admissions, blood collection staff, respiratory therapy staff, imaging services).

Incidence: The number of newly diagnosed cases during a specific time period.

Incubation period: The time from exposure to an infectious agent until signs and symptoms of the disease appear.

Intensive care unit (ICU): A care area that provides intensive observation, diagnosis, and therapeutic procedures for adults and/or children who are critically ill. Care areas that provide step-down, intermediate care, specialty care or telemetry only are not ICUs. The type of ICU in NHSN is determined by the kind of patients cared for in that unit. That is, if 80% of patients are of a certain type (e.g., patients with trauma), then that ICU is designated as that type of unit (in this case, trauma ICU). When a unit houses roughly equal populations of medical and surgical patients, it is called a medical/surgical unit. (CDC, The National Healthcare Safety Network Manual: Patient Safety Component Protocol, January, 2008.)

Learning collaborative: A learning collaborative is based on the model that knowledge can be created within a population where members actively interact by sharing experiences and engage in a common task where each individual depends on and is accountable to each other.

Numerator: The upper part of a fraction used to calculate a rate or ratio (e.g., for the fraction ¾, the numerator is 3). In a rate, the numerator can be the number of people who have experienced an event while the denominator can be the total population at risk for the event. When calculating CLABSI rates, the numerator is the number of CLABSI events for the hospital unit.

Pathogen: Any agent or microorganism that causes disease.

p-value: A p-value provides an assessment of whether a difference between two results is statistically significant. For example, a p value of less than or equal to 0.05 indicates that the difference found between two results is significant and has a 5% or less chance of being due to chance alone. Conversely, a p-value of greater than 0.05 indicates that there is no significant difference between the results.

Risk adjusted: A standardized method used to ensure that intrinsic and extrinsic risk factors for a healthcare-associated infection are considered in the calculation of healthcare-associated infection rates.

Surveillance: Ongoing, systematic collection, analysis, and interpretation of health-related data essential to the planning, implementation and evaluation of public health practice.

Virulence: Severity of the disease that a microorganism is capable of causing.

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