Feasibility of Conducting Surveillance for Healthcare-Associated Infections in New Mexico

Report Prepared by the House Joint Memorial 67 Task Force

Convened by the New Mexico Department of Health

November 1, 2007

Table of Contents

Executive Summary 3

The Task Force's Guiding Principles for HAI Surveillance 5

I. History of Healthcare-Associated Infections Surveillance and Reporting in New Mexico 6

II. Overview of Healthcare-Associated Infection (HAI) Surveillance in the U.S. 7

III. Approaches Taken by Other States 12

IV. Survey of Infection Control Practitioners in New Mexico Hospitals 13

V. National Perspectives 14
1. Centers for Disease Control and Prevention (CDC) 15
2. Society for Healthcare Epidemiology of America (SHEA) 16
3. Association for Professionals in Infection Control and Epidemiology (APIC) 18
4. Council of State and Territorial Epidemiologists (CSTE) and Infectious Disease Society of America (IDSA) 18
5. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) 18
6. Consumers 19

III. HJM 67 Task Force Conclusions 20

Glossary of Definitions 22

Acronyms 23

References 24

Members of the New Mexico House Joint Memorial 67 Task Force 27

Executive Summary

NOTE: See glossary for definitions of words marked with *.

Background

During the last 30 years, there has been growing attention paid to the issue of healthcare-associated infections* (HAIs). In the late 1970s, the Centers for Disease Control and Prevention (CDC) established the National Nosocomial* Infections Surveillance* System (NNIS). In 1999, the Institute of Medicine (IOM) published a report entitled "To Err is Human" detailing 98,000 deaths and many more injuries yearly in the United States due to medical errors and nosocomial infections. After release of this report, new agencies and goals were established at the national level in order to decrease the adverse consequences of medical errors. HAIs also affect healthcare facilities' costs and operating margins: for example, HAI bloodstream infections have been reported to have an average cost of $33,268[1].

The 'patient safety' movement has become a national priority with a focus on evidence-based practices and improvement of systems. Knowledge and experience in the area of HAIs has been rapidly growing. National initiatives that focus on publicly reporting HAI measures in the context of improving the quality of care provided by hospitals include the National Healthcare Safety Network (NHSN) surveillance system and the Hospital Quality Alliance: Improving Care Through Information (HQA). HQA includes a diverse group of public-private partners who are identifying quality measures for reporting by hospitals. In June 2007, CDC made the NHSN available to all hospitals. This web-enabled system has shown that rates of specific infections from the 200 hospitals participating in the pilot program have declined compared to previous information published by NNIS.

New Mexico House Joint Memorial 67(HJM 67) Task Force

At the behest of the New Mexico Legislature, the New Mexico Department of Health (NMDOH) led the 'HJM 67 Task Force' to " . . . assess the feasibility* of healthcare-associated infection surveillance in New Mexico." The task force included representatives from: a) consumers; b) New Mexico Association for Professionals in Infection Control and Epidemiology (APIC); c) New Mexico Hospital Association (NMHA); d) New Mexico hospitals (including large and smaller rural settings); e) Health Policy Commission (HPC); f) New Mexico Medical Review Association (NMMRA) g) local representatives of the Society for Healthcare Epidemiology of America (SHEA); and h) Department of Health. Others were invited and those that did not attend in person were kept informed of the status of the task force (e.g., Indian Health Service).

The HJM 67 Task Force concluded that it is feasible for New Mexico to conduct surveillance for healthcare-associated infections. However, design and implementation of systems to conduct this surveillance will place a burden on participating institutions. Therefore, in order to successfully conduct HAI surveillance in New Mexico, the task force suggest that the following conditions are met:

- Acknowledgement that the overriding goal of HAI surveillance is to decrease adverse outcomes to hospitalized patients.
- Establishment of an Advisory Committee to guide decisions, evaluate progress and provide ongoing recommendations for modification and expansion of the surveillance system as indicated by outcomes of the initiative.

- Recognition of the unique characteristics of New Mexico in the design of the surveillance system.
- Appropriation of newly dedicated resources.

The HJM 67 Task Force reviewed past and present HAI activities in New Mexico and associated resources as well as HAI initiatives at the national level. The review conducted by the task force included: a) assessment of current infection control capacity and practices in New Mexico hospitals; b) history of HAI surveillance activities in other states; c) national models for HAI data collection; d) pending federal regulations/guidelines for patient safety; e) consumer issues with respect to HAIs; f) resources currently available in New Mexico that could be applied to future HAI surveillance. The following recommendations reflect results of the assessment conducted by the task force.

Recommendations of the HJM 67 Task Force

- The NMDOH Secretary of Health should appoint a multi-disciplinary advisory committee with ongoing representation by agencies who served on the HJM 67 Task Force--and additional representation by identified stakeholders--to develop methods for collecting, analyzing and disseminating information provided by participating healthcare facilities.
- The first year of HAI surveillance should be conducted as a pilot. Participation in the pilot should be voluntary, not reported publicly and should be treated confidentially. The New Mexico Hospital Association should encourage members to participate in the pilot and all results should be reviewed by the Advisory Committee comprised of professionals and citizens.
- The initial pilot year should include a minimum of three hospitals that collect data on two measures: a) central line-associated bloodstream infections* (CLABSIs) in adult intensive-care units* (ICUs)]; b) influenza vaccination rates of healthcare workers (HCW).
- The pilot year outcomes should be assessed before further recommendations are provided.
- Any proposed legislation related to HAI surveillance should be informed by the Advisory Committee.
- New Mexico's approach to HAI surveillance and public reporting should be aligned with ongoing development of national systems and associated recommendations.
- All information that is ultimately publicly reported should be risk-adjusted* as recommended by the Advisory Committee.
- Participation in HAI surveillance should never violate a patient's right to confidentiality.
- Reporters of data should not be held liable by any party.
- An analysis should be conducted to estimate the current economic burden of HAIs in acute care hospitals in New Mexico.
- It is critical that consumer preferences for how they want to obtain the data are taken into consideration when designing public reports: education about the meaning of those reports should be included.
- At the discretion of the Legislature, $250,000 could be appropriated to the Department of Health for implementation of the proposed pilot year of surveillance of HAIs, which would include provision of technical assistance to participating hospitals, monitoring and management of the data, facilitation of the advisory committee, and assessment of the pilot year outcomes.

HJM 67 Task Force Guiding Principles

Throughout the course of its work, the task force applied the following criteria when considering whether conducting HAI surveillance is feasible in New Mexico and, if so, how New Mexico might establish a meaningful and valid HAI surveillance system:

1) The measures used for reporting of specific HAIs, as well as the process measures used to prevent such infections, should be based on objective, accurate and consistent definitions that can be applied by all New Mexico hospitals that are subject to the reporting requirements and across continuing healthcare systems.
2) Outcome measures used for reporting (e.g., rates of specific HAIs) should be developed to include an appropriate level of risk adjustment for patient and hospital-specific factors related to increased risk for infection.
3) The HAI surveillance system should collect and report healthcare data that are conveyed in a consumer-friendly fashion, and that are also useful to the hospital for its infection control and prevention efforts.
4) Hospitals should use the HAI surveillance data to provide feedback to their healthcare providers about the facility's performance, to provide additional information to guide the hospital's ongoing efforts to prevent HAIs, and utilize the opportunity to compare the facility's data with others in the larger New Mexico and national healthcare systems.
5) To avoid duplication of efforts, data collection requirements with regard to measures selected, definitions used, populations surveyed and surveillance criteria, should--to the extent possible--be consistent with the recommendations and requirements of national organizations and agencies.
6) Reporting requirements should be phased-in so that hospitals can modify their surveillance activities as needed, ensure reliability of data to be reported, and assess needs for additional resources.
7) Requirements for HAI surveillance should take into consideration the increased workload for the infection control professional (ICP) and other hospital personnel as well as the need for increased investment in appropriate information technology in hospitals to facilitate the data collection and analysis required.
8) NMDOH should provide or facilitate initial and ongoing training for hospital staff in data collection and data submission processes required by the HAI surveillance system.
9) An Advisory Committee should be established to advise NMDOH about the ongoing implementation of the surveillance system and to assist NMDOH in the promulgation and review of regulations regarding the surveillance, reporting and prevention of HAIs.
10) The impact of public reporting of HAIs should be regularly evaluated: an evaluation plan should be incorporated into the surveillance system from the outset.

A variety of potential measures were reviewed by the task force using specific criteria based on the above-mentioned principles: CLABSI and HCW influenza vaccination received the highest scores and are recommended as the two measures to implement in the first pilot year (See Table 1).

Table 1. Potential Measures for HAI Surveillance in New Mexico

HAI Indicator	Recommended by national consensus guidelines - based on accurate and consistent definition	Feasibility of surveillance based on capacity survey, availability of reporting instrument	Data can be conveyed in a consumer-friendly fashion - national comparator available	General applicability across the continuum of care	Strong evidence for processes to achieve effective reduction or elimination of the HAI	Score
CLABSI	+	+	+	+	+	5
Surgical Site Infections (SSIs), including processes	+	Already partly in place, but not with full risk adjustment +1/2	Updated comparator not available	NA	+	2.5
HCW influenza vaccination	+	+	+	+	+ strong evidence base for full implementation	5
Methicillin-resistant Staphylococcus Aureus (MRSA) in defined HAI		+			+	2
Catheter-associated urinary tract infection (CA-UTI)						0
Ventilator-associated pneumonia (VAP)	-1: definition very problematic, rates questionable	+	+		+	2
Clostridium difficile (*C. difficile*)		Definitions variable		+		1
Other resistant organisms						0

Scale: -1 (problem identified), 0 (no evidence), 1 (subjective criteria met)

I. History of Healthcare-Associated Infections Surveillance and Reporting in New Mexico

The New Mexico Legislature has considered a number of public reporting proposals in recent sessions. In the 2005 session, HM 43 directed hospitals to work with state agencies to "develop a process for informing the public about hospital charges, hospital quality and annual increases in hospital charges." In response, the New Mexico Hospital Association (NMHA) met with the bill sponsors, state agencies and hospital experts to consider the options. The result was

that NMHA opened a public website in September 2006 that reported comparative average charge information by diagnosis-related group (DRG). In subsequent phases, annual price increase information was added and in 2007, the site began reporting hospital compliance with surgical infection prevention measures (i.e., starting and stopping antibiotics before and after surgery). This is a voluntary process and currently 26 hospitals are participating. NMHA is supportive of the recommendations of HJM 67 and will be considering a "transparency friendly" policy at its November board meeting.

Some New Mexican hospitals voluntarily participate in Hospital Compare. The Hospital Compare web site (www.hospitalcompare.hhs.gov) was created through the efforts of Centers for Medicare and Medicaid Services (CMS), the Department of Health and Human Services (DHHS) and other members of the Hospital Quality Alliance (HQA). HQA is a national public/private collaboration designed to promote the reporting of quality of care in hospitals. Hospitals voluntarily submit quality information from their medical records on process of care for patients undergoing surgery and being treated for heart attack, heart failure and pneumonia. Hospitals voluntarily submit data from their medical records about treatments that adult patients receive for these conditions, including patients with Medicare and those who do not have Medicare. In particular, hospitals who participate in the CMS Surgical Care Improvement Project (SCIP) submit data on surgical process measures, including timing, selection and discontinuation of prophylactic antibiotics, appropriate hair removal, immediate post-operative normothermia and glucose control in cardiac surgery patients. Many of these indicators are already available to the public and listed by facility (www.medqic.org/scip): more indicators of surgical quality care and outcomes will follow as this project progresses.

Some New Mexican hospitals also participate in other multi-institution efforts to prevent HAIs such as the Five Million Lives Campaign conducted by the Institute for Healthcare Improvement. The Five Million Lives Campaign (http://www.ihi.org/IHI/Programs/Campaign/) is a voluntary initiative to protect patients from five million incidents of medical harm over the two year period of December 2006 – December 2008. As of July of 2007, 27 New Mexican hospitals had enrolled as participants in the campaign. These hospitals agreed to adopt the following 12 changes in care to save lives and reduce patient injuries:

1. Deploy Rapid Response Teams
2. Deliver Reliable, Evidence-Based Care for Acute Myocardial Infarction
3. Prevent Adverse Drug Events (ADEs)
4. Prevent Central Line Infections
5. Prevent Surgical Site Infections
6. Prevent Ventilator-Associated Pneumonia
7. Prevent Harm from High-Alert Medications
8. Reduce Surgical Complications
9. Prevent Pressure Ulcers
10. Reduce Methicillin-Resistant *Staphylococcus aureus* (MRSA) infection
11. Deliver Reliable, Evidence-Based Care for Congestive Heart Failure
12. Get Boards on Board (referring to hospital Boards of Directors)

II. Overview of healthcare-associated infection (HAI) surveillance in the U.S.

This section provides a perspective on the history of healthcare-associated infection (HAI) epidemiology in the United States. The science of HAI has evolved from a system focused on case definitions and surveillance methodologies in inpatient care to one of interdisciplinary

collaboration using evidence-based interventions to eradicate HAIs across a spectrum of healthcare settings. In addition, practitioners in healthcare epidemiology also participate in disease prevention through immunization of healthcare workers and patients, prevention of injuries to healthcare workers, community disaster preparedness, and communication regarding emerging infectious threats, with education a central part of their mission.

1. The development of the framework for surveillance and improvement.

The modern infection control era is generally recognized as beginning in the late 1970s with the creation of the Centers for Disease Control and Prevention (CDC) National Nosocomial Infection Surveillance or NNIS[2]. NNIS consisted of just over 300 hospitals which submitted data on infections in intensive care units (ICUs) and selected surgical procedures. During this era, definitions for HAIs were developed and risk stratification--according to type of ICU--was introduced. Appropriate denominators using device-days for patients with device-related infections were developed. The NNIS risk system for surgical site infection, a simple three-point score based on the American Society of Anesthesiology score, duration of procedure and wound class, was developed and validated[3]. Other data collected included the prevalence of antibiotic-resistant bacteria and antibiotic usage in ICUs. The identities of the contributing hospitals remained strictly confidential, while the aggregate data were published and updated periodically by the CDC Hospital Infections Program. NNIS remained functional until 2005, when it was replaced by the National Healthcare Safety Network (NHSN)[4].

Two major professional societies, the Association for Professionals in Infection Control and Epidemiology (APIC), which offers certification, and the Society for Healthcare Epidemiology of America, were formed in this era and, through their respective journals, offered a venue for publication of peer-reviewed research in healthcare epidemiology. Then, as now, industry and government funding for research in infection control was limited, and most published work consisted of observational or quasi-experimental studies performed with minimal or no funding[5].

2. The Institute of Medicine report, "To Err is Human", begins the process of change.

In the 1990s, the Joint Commission, then known as the Joint Commission on Accreditation of Healthcare Organizations, focused their infection control surveys largely on the credentials of the infection control staff in hospitals, the extent and type of surveillance being performed, whether the institution compared its rates to published rates such as NNIS, and aspects of the environment of care relating to general cleanliness.

The 1999 Institute of Medicine (IOM) report, "To Err is Human", detailed the toll of 98,000 deaths and hundreds of thousands of injuries yearly due to medical errors and nosocomial infections in the U.S.[6] Following this report, Congress established the Agency for Healthcare Quality and Research as a funding agency for research on healthcare delivery. In the context of this report, and a series of articles in the Chicago Tribune detailing infection control deficiencies in accredited hospitals, the Joint Commission restructured its approach to surveying hospitals for infection control; hospitals were required to create infection control plans for improvement in all deficient areas, hospital leadership was held directly responsible for infection control support, hand hygiene became a principle focus of the core "Patient Safety Goals", and unanticipated deaths from HAIs were to be investigated using "root cause analysis"[7].

3. The "patient safety movement" is born and the Institute for Healthcare Improvement is created.

Immediately upon the release of the IOM report, Congress scheduled hearings and President Bill Clinton instructed the Quality Interagency Coordination Task Force to analyze the report. Sixty days later, on the recommendation of the task force, the President called on all federal health agencies to implement the IOM recommendations. The IOM report made four major points: 1) the problem of accidental injury is serious; 2) the cause is not careless people but faulty systems; 3) we need to redesign our systems; 4) patient safety must become a national priority. The patient safety movement represents a break from prior concepts of quality in healthcare which were based on professional competence and individual responsibility. Quality improvement in healthcare has incorporated ideas from other industries to create a new emphasis on systems, training, communication, surveillance, teamwork, transparency, evidence-based practice, and redundancy[8].

The Institute for Healthcare Improvement (IHI) was founded in Massachusetts in 1991, predating the IOM report. This non-profit organization is best known for developing the 2005 "100,000 lives" campaign which recruited hospitals to save over 125,000 lives through implementation of evidence-based practices to improve patient safety. The current initiative, the "Five Million Lives Campaign", aims to protect patients from five million incidents of medical harm in United States' hospitals between December 2006 and December 2008. Out of twelve kinds of adverse events targeted by this campaign, four involve HAIs [9].

4. Infection control professionals become leaders in patient safety.

By the early 2000s, the accrual of the evidence base in HAI prevention and the focus on patient safety put several key tools in the hands of infection control professionals. The dissemination of alcohol hand gel and its endorsement by the CDC Guideline on Hand Hygiene in Healthcare Settings (2002) made compliance with hand hygiene in healthcare feasible[10]. The CDC also codified the medical evidence into several key guidelines on prevention of surgical site infection (1999)[11], central venous catheter-related bloodstream infection (2002)[12], healthcare-associated pneumonia (2004)[13], and management of multidrug-resistant organisms (2006)[14]. The solid scientific and statistical base for surveillance, definitions, and trending of HAI make these rates among the most advanced and reliable indicators of patient safety in many systems.

5. Best practices for improvement are spread through regional and national collaborative partnerships

Concurrent with the maturing of the scientific evidence, widespread implementation of guidelines began through national and regional collaborative partnerships in the early 2000s. Most of these followed models for knowledge dissemination, rapid cycle process change and outcomes measurements popularized by the IHI. An example which involves many New Mexico hospitals is the Surgical Care Improvement Project of the Centers for Medicare and Medicaid Services (CMS) and administered through our contracted Quality Improvement Organization, the New Mexico Medical Review Association (NMMRA). The national pilot project, known as Surgical Infection Prevention, demonstrated a 27% drop in surgical site infections among 44 participating hospitals (including University of New Mexico Health Sciences Center) over one year[15]. Other landmark publications described decreases in catheter-related bloodstream infections of 66%[16], and control of vancomycin-resistant enterococci by collaborative efforts in

the upper Midwest[17]. The emergence of collaboratives marked the beginning of inter-institutional transparency about infection rates, processes and barriers to success. Among CMS-required quality indicators relevant to infection, compliance with best practices to prevent surgical site infection in hospitals is already made available to the consumer through CMS at www.hospitalcompare.hhs.gov and outcomes with infection rates by major procedure will soon be added to this website.

6. The first state with mandated reporting for healthcare-associated infections publishes data in 2005.

Consumer and payor concern over the high human and financial cost of HAI have led to legislative proposals for public reporting of HAI rates from acute care hospitals in most states. Pennsylvania, where the state had funded the Pennsylvania Health Care Cost Containment Council (PHC4) since 1986, was an early example. Beginning in January 2004, hospitals were required to submit four categories of HAI data to PHC4 on a quarterly basis, using definitions established by CDC. In 2005, PHC4 reported a total of 19,154 HAIs in Pennsylvania's 168 acute care hospitals[18].

Controversies and lessons learned from the Pennsylvania experience included problems with risk adjustment between facilities using administrative data, problematic definitions for certain types of infections, questions about the accuracy of costs of HAIs obtained through administrative data, and questions about the utility of the present system for consumers, payors and hospitals. News releases from the Hospitals and Healthcare Association of Pennsylvania from 2006 to 2007 demonstrate the evolution and resolution of some of these issues[19]. As Pennsylvania continues to refine its reporting legislation, requirements for data-gathering software to be purchased by larger hospitals and legal protections for participating hospitals have been added[20].

Professional societies, CDC, and the National Quality Forum, a clearing house for national guidelines, have recommended limiting public reporting to HAI with the least subjective definitions and including process measures such as optimal timing of preoperative antibiotics and influenza vaccination of healthcare workers[21,22,23].

Better understanding of the pitfalls of public reporting of HAI is emerging from states with broad-based reporting in place: independent analysis of data from PHC4 shows that risk adjustment based on patient severity of illness does not affect subsequent rates of HAI[24]; many experts in infection control believe that some kinds of HAI are eradicable and that the concept of "benchmarking" rates is obsolete[25]; and rapid response to and analysis of individual episodes of HAI will become the new means of prevention within institutions[26].

7. Consumer awareness pushes legislative action for methicillin-resistant *Staphylococcus aureus* (MRSA); Veterans' Health Administration is a leader in this area.

While the reporting of standard device-associated and surgical infection rates continues to be refined, consumers have become aware of a significant threat to patient safety, that of multidrug-resistant organisms, especially methicillin-resistant *Staphylococcus aureus* (MRSA). While some members of the infection control community have long advocated for more aggressive control of MRSA using active surveillance techniques for carriers of this organism, active surveillance has not been promoted as a first-line measure by CDC. Nonetheless, IHI and APIC have created initiatives to reduce MRSA, and the Veterans' Administration has funded most of its larger hospitals to buy new laboratory equipment for rapid detection and hire

additional staff to implement MRSA reduction programs[27]. Early results from hospitals with active surveillance programs in place show 50-85% reductions in invasive MRSA infections[28]. Several states have passed legislation addressing MRSA, usually requiring hospitals to perform an internal risk assessment and then implementing targeted active surveillance[29].

8. Centers for Medicare and Medicaid Services (CMS) steps in with incentives.

CMS has reached an independent assessment that some forms of HAIs are entirely preventable; the new Diagnosis-Related Group Prospective Payment Plan states that catheter-associated urinary tract infections, catheter-associated bloodstream infections, and deep chest wound infections following bypass surgery are complications that will not generate any form of extra payment to hospitals. These changes will be in effect as of October 2008. The document also indicates that MRSA and *Clostridium difficile*-related infections will be considered for future prospective payment exclusions[30].

9. Federal surveillance on the horizon

In June 2007, CDC made NHSN available to all hospitals. This web-based system allows uploads of individual facility infection control data directly to CDC or through a state-based administrator. Rates of infection from the 200 hospitals participating in the pilot program were published in June 2007 and showed significant declines in all device-associated infections in and outside of ICUs compared to previous data published from the NNIS system[31].

Data entry to this system is labor-intensive. Of note, even the VA, with the most advanced electronic medical record system in the country, is piloting data-gathering software to help infection control professionals populate NHSN. Once data are entered, however, hospitals have ready access to their infection rates, which can be manipulated into various graphic formats, trended and compared to national rates.

10. Conclusion: preparing hospitals to go to the next level of public accountability for patient safety.

The eight years since the publication of the IOM report have seen extraordinary changes in infection control in the United States. Infection control data have moved to center stage in measurements of hospital quality. A paradigm shift has occurred where infections long-tolerated, like MRSA, have been targeted for reduction in many healthcare systems, and payors have signaled the need to eliminate some device-associated infections. A national surveillance reporting system has been developed for device-associated infections and many facilities are already reporting on surgical quality data.

National agencies, such as the National Quality Forum, in conjunction with professional societies, have examined the pitfalls of public reporting of HAIs and have created recommendations which are well-reasoned. Many aspects of infection control involve new challenges where the science of control and reporting is not well defined. The work of regional collaboratives in areas such as MRSA control has just begun and the problem of other resistant organisms in hospitals has yet to be addressed.

The most advanced systems and updated legislation to date have emphasized information technology and staff support in gathering infection control data, while allowing flexibility in how hospitals address problems when the evidence base is still evolving. Infection control

professionals welcome public reporting and accountability, but need staff and technology support to do this accurately while continuing to focus on the elimination of HAIs altogether.

III. Approaches Taken by Other States

Other states' actions and experiences may provide valuable lessons for a proposed HAI surveillance system in New Mexico. While all of the states with required reporting are following similar paths, each state has developed its own unique method for collecting and publishing hospital infection information.

To date:

- Multiple states, like New Mexico, have current legislative activity related to HAIs.
- 20 states have passed legislation requiring public reporting of HAI rates.
- 2 states have laws that mandate the public reporting of HAI information, but do not specifically require HAI rates to be reported (CA, RI).
- 2 states have laws that mandate the reporting of HAIs, but only to the state government (NE, NV).
- 1 state has legislation for voluntary reporting of HAI information (AR).
- 1 state's legislation established an advisory committee to make recommendations for public reporting of HAIs (NC).

The task force selected seven states to assess their actions and experiences related to HAI surveillance. A representative from each state was interviewed regarding their perspective of HAI surveillance. Usually, this representative was an employee of a Department of Health and was directly involved in the coordination and dissemination of the data. Table 2 below highlights select findings from the interviews.

Table 2. Select Findings from HAI Surveillance Approaches in 6 States

	Data Collection System	Start Date	Measures	Public Report Date	Means of Public Reporting
Colorado	NHSN	7/31/07	CLABSI SSI§	January 2008	Web site
Missouri	Missouri Healthcare-Associated Infection Reporting System (MHIRS)	7/01/05	CLABSI SSI	March 2006	Web site
New York	NHSN	1/01/07	CLABSI SSI	March 2008 (No hospital identifiers) March 2009 (Hospitals identified)	

Oregon	To be determined by advisory committee	1/01/09	CLABSI SSI UTI	January 2010	To be determined by advisory committee
Tennessee	NHSN	1/01/08	CLABSI SSI		Web site
Virginia	NHSN	7/01/08	CLABSI	Upon request	To date, no specific provisions
Vermont	NHSN	11/01/06	CLABSI SSI	June 2007	

CLABSI = Central line associated blood stream infection
SSI = Surgical site infection
UTI = Urinary tract infection
§ States vary greatly in SSI surveillance in terms of both selected procedures and selected units.

IV. Survey of Infection Control Practitioners in New Mexico Hospitals

In August/September 2007, a web-enabled survey was conducted among infection control practitioners (ICP) in the state through New Mexico Association for Practitioners in Infection Control (APIC) and the New Mexico Hospital Association under the auspices of HJM 67 Task Force. The anonymous survey captured information on the size of the facility, the number of employees devoted to infection control, what basic surveillance activities were being performed for HAIs and the electronic reporting capacity of each facility. This survey was designed to highlight potential challenges to HAI surveillance and reporting, as well as to identify surveillance efforts that are already occurring to some level and may, therefore, be possible to standardize and implement in other facilities.

The survey was sent to 44 hospitals that offer acute care. Thirty-nine responses from unique facilities were received and analyzed by the NMDOH (88.6% response rate) (See Table 3). Hospitals were grouped into the following sizes for analytic purposes: 1) $\leq$ 25 total beds; 2) 26-50 beds; 3) 51-100 beds; and 4) >100 beds. Highlights of the survey analysis include:

- The mean number of beds per 1 FTE ICP exceeded the CDC's recommendation (i.e., 100 beds per 1 FTE) in small-medium and large hospitals.
- At least 50% of responses in each size category of hospital stated that some kind of surveillance is already being performed for CLABSIs. The majority of those who are performing this surveillance are performing it inside and outside of ICUs.
- Of 7 medium/large hospitals where cardiac surgery can be done, 6 (85.7%) have some kind of cardiac surgical site infection surveillance being performed by an ICP. Other types of surgical site surveillance are being performed at fewer facilities.
- Larger facilities have a greater capacity to monitor infection control activities through electronic reporting.

Table 3. Survey of New Mexico Hospital-Based Infection Control Practitioners, 2007

	Small Hospitals ≤ 25 Total Beds	Small-Medium 26-50 Beds	Medium-Large 51-100 Beds	Large >100 Beds
	n=12	n=6	n=10	n=11
Size/Personnel				
Mean Total Beds	17.3	45.2	66.3	247.4
Mean Acute Care Beds	10.7	37	40.8	154.6
Mean no. of FTEs dedicated for Infection Control (ICP)	0.77	0.44	0.84	1.64
Mean no. of beds per ICP FTE position	35.3	107.5	94.2	187.5
Percent of FTE positions Certified in Infection Control	10.0%	25.0%	22.2%	48.1%
Percent certified by JACHO	45.5%	50.0%	90.0%	100.0%
Mean # major procedures* annually	241.4	1215.8	1669.8	4574.3
Surveillance	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Catheter-associated blood stream infections surveillance				
1. ICUs	5 (50.0)	4 (100.0)	8 (88.9)	7 (70.0)
2. outside ICUs	4 (80.0)	3 (75.0)	6 (75.0)	5 (71.4)
Surgical Site Infection Surveillance				
Does your facility perform cardiac surgeries?	0 (0.0)	0 (0.0)	1 (10.0)	6 (54.5)
Cardiac surgery infection surveillance	0 (0.0)	0 (0.0)	1 (100.0)	5 (83.3)
Other surveillance:				
Colon Surgery	6 (50.0)	3 (50.0)	6 (60.0)	7 (63.6)
Hysterectomy	3 (25.0)	2 (33.3)	4 (40.0)	6 (54.6)
Total Joint replacement	0 (0.0)	1 (16.7)	6 (60.0)	9 (81.8)
Data Capacity	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Use electronic records for reporting	3 (30.0)	3 (60.0)	6 (66.7)	9 (90.0)
Use data mining software to query for surveillance purposes	5 (50.0)	3 (60.0)	4 (44.4)	1 (10.0)
Perform daily review of positive cultures	9 (90.0)	2 (40.00)	6 (66.7)	8 (80.0)

V. National Perspectives

In order to fully understand issues relating to public reporting of healthcare-associated infection rates, the task force reviewed the perspectives of federal agencies, national professional organizations, and consumers. The following is a synopsis of those perspectives.

1. Centers for Disease Control and Prevention (CDC)

CDC has long played a leading role to characterize and guide surveillance for HAIs. The primary group at the agency that provides leadership on this issue is the Division of Healthcare Quality Promotion (DHQP), formerly the Hospital Infections Division, housed within the National Center for Preparedness, Detection and Control of Infectious Diseases (NCPDCID). The majority of information described in this section can be found at the DHQP website: http://www.cdc.gov/ncidod/dhqp/index.html.

Current Endorsement

CDC currently does not advocate either for or against the mandatory reporting of HAI rates in facilities, nor has it published model legislation. Instead, it takes a role of providing guidance on how to systematically collect data on HAIs, with recommendations on essential surveillance elements and definitions: it has provided a nationally available reporting system to do so.

CDC and Healthcare Infection Control Practices Advisory Committee (HICPAC)

Much of the guidance currently coming from CDC contains recommendations of the HICPAC, a federally appointed group of external infection control experts who provide advice to CDC on the issue of HAIs and broader infection control issues. This collaboration has led to the publishing of guidance documents including, most recently, one entitled "Guidance on Public Reporting of Healthcare-Associated Infections", published in the 2005 American Journal of Infection Control www.cdc.gov/ncidod/hip/PublicReportingGuide.pdf . A summary of this document includes the following points for those who design and implement HAI public reporting systems:

- Use established public health surveillance methods,
- Create multidisciplinary advisory panels,
- Choose proper process and outcome measures based on facility type and phase,
- Provide regular, confidential feedback to providers, and
- Select one of more of the following process or outcome measures: 1) central-line insertion practices; 2) surgical antimicrobial prophylaxis; 3) influenza vaccination coverage (patients and healthcare personnel); 4) CLABSIs; 5) surgical site infections (SSIs) following select operations.

CDC, in conjunction with HICPAC, also publishes the comprehensive document "Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007" found at http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf . This document is updated periodically to summarize changing factors of HAIs, new research and current best practices for infection control in healthcare settings.

CDC and National Healthcare Safety Network (NHSN)

The NHSN was established in 2005 to replace three legacy surveillance systems run by CDC: the National Nosocomial Infections Surveillance (NNIS) System, the Dialysis Surveillance Network (DSN) and the National Surveillance of Healthcare Workers (NaSH).

NHSN is a no-cost, secure, internet-based surveillance system and its purposes include:

- Estimate of the magnitude of HAIs,
- Discover HAI trends,
- Provide facilities with risk-adjusted data,
- Assist facilities in developing surveillance and analysis methods, and
- Conduct collaborative research studies with NHSN member facilities.

Comprehensive information on National Healthcare Safety Network can be found at http://www.cdc.gov/ncidod/dhqp/nhsn.html

CDC currently provides national open enrollment into NHSN for all hospitals and outpatient hemodialysis centers and provided a report on a full year of data in 2006. This report "National Healthcare Safety Network (NHSN), data summary for 2006, issued June 2007" can be found at http://www.cdc.gov/ncidod/dhqp/pdf/nhsn/2006_NHSN_Report.pdf . The report summarizes device-associated infections data reported by participating hospitals, provides interpretations of the national data and gives guidance for an individual facility to interpret their own data.

Because the resources and interests of facilities surrounding HAIs can vary widely, the CDC has also published an "Outline for Healthcare-Associated Infections Surveillance" found at http://www.cdc.gov/ncidod/dhqp/pdf/nhsn/OutlineForHAISurveillance.pdf. This document is intended to list the essential elements for surveillance of HAIs and includes information on the following:

- Essential Elements of Surveillance
  - Population assessment
  - Outcomes or processes to target
  - Time period
  - Methodology
  - Monitoring
  - Denominator data
  - Analysis
  - Reporting
- Surveillance Methodology
  - Active vs. passive
  - Patient-based vs. lab-based
  - Prospective vs. retrospective
  - Priority vs. comprehensive
  - Risk-adjusted rates vs. crude
  - Incidence vs. prevalence
- Numerator Data Collection
- Denominator Data Collection

2. Society for Healthcare Epidemiology of America (SHEA)

The core of SHEA's stance is that the society supports the intended goals of public reporting of HAIs, which are "to improve the quality of healthcare delivery by preventing infections and providing credible information to the consumer", but adds that the role of the society is to support and promote activities that will create a public reporting system that is "epidemiologically sound, scientifically valid, and fair to both healthcare providers and consumers". SHEA and Infectious Diseases Society of America (IDSA) endorse and follow the

guidance on mandatory public reporting, which was published by the HICPAC of the CDC entitled "Guidance on Public Reporting of Healthcare-Associated Infections", available at www.cdc.gov/ncidod/hip/PublicReportingGuide.pdf SHEA has also issued the following 3 key documents that echo this stance and may be accessed on the society's website at http://www.shea-online.org/news/publicreporting.cfm.

1) Position Paper

In "Public Disclosure of Healthcare-Associated Infections: The Role of the Society for Healthcare Epidemiology of America," SHEA urges its members to promote practices that are epidemiologically sound and evidence based. On an organizational level, SHEA states it will continue to be a partner with organizations that have a stake in HAI reporting.

2) Tool Kit

SHEA joined forces with APIC, CDC, CSTE, and IDSA to create a tool kit for public reporting of HAIs that incorporates principles outlined in the fore-mentioned document. The resulting collaboration, "Essentials of Public Reporting of Healthcare-Associated Infections: A Tool Kit," offers guidance on definitions, case-finding methodologies and risk adjustment strategies so that states may have a uniform approach for public reporting requirements (can be directly accessed at: http://www.shea-online.org/Assets/files/Essentials_of_Public_Reporting_Tool_Kit.pdf.

3) Model legislation

The model legislation proposed by SHEA is written to authorize a state agency to establish a public reporting system following the guidelines and definitions of CDC's HICPAC and NHSN, while using the information gathered to improve patient safety and healthcare outcomes. Areas stressed in the legislation include a period of study and validation of data collection methods, submission of data without reference to specific patients or infecting organisms, the consideration of use of the NHSN reporting system as the state's reporting system, and public reporting which enables comparison to state or national benchmarks.

Other SHEA activities involving legislative initiatives in healthcare-associated infections

More recently, SHEA and APIC released a joint statement discussing legislative mandates to screen patients for MRSA and VRE[32]. This statement stresses that legislative action mandating broad changes in infection control practice to control multidrug-resistant organisms do not allow for risk stratification, appropriate resource allocation, and evidence-based stepped application of infection control modalities within institutions. These guidelines are available in CDC *Guideline for Management of Multidrug-resistant Organisms in Healthcare Settings 2006* at http://www.cdc.gov/ncidod/dhqp/pdf/ar/mdroGuideline2006.pdf .

According to SHEA, sweeping legislative mandates in this area would create loss of professional autonomy for ICPs, misallocation of resources, data management and validation issues, increased numbers of patients requiring isolation, barriers to discharge, and a large burden of laboratory costs. SHEA and APIC support the "continued development, validation and application of efficacious and cost-effective strategies for the prevention of infections caused by MRSA, VRE and other pathogens". The core position here is that legislation is not the appropriate tool to create effective change in an area where evidence-based practice is evolving very rapidly. This contrasts with the stance on device-associated HAIs and surgical site infections, where validated voluntary reporting systems have existed for decades through the

NNIS system, which provided a framework for evolution of this system into the more inclusive NHSN.

3. Association for Professionals in Infection Control and Epidemiology (APIC)

In February of 2007, APIC released a 15-page executive briefing entitled "Dispelling the Myths: The True Cost of Healthcare-Associated Infections (HAIs)." And it is available at http://www.apic.org/Content/NavigationMenu/PracticeGuidance/Reports/hai_whitepaper.pdf. The document supports the collaboration of experts in infection prevention and hospital finance to identify and engage in opportunities that will enhance operating margins through the reduction of HAIs. Highlighting prominent healthcare organizations that have documented the economic value of eliminating HAIs, APIC encouraged each of its members and their financial leaders to examine the potential cost savings. An HAI cost calculator, available via the APIC website (http://www.apic.org/AM/Template.cfm?Section=Home), supplies additional guidance for institutions interested in determining their cost of HAIs.

Overall, APIC seeks to collaborate with healthcare and health plan providers, related industries, quality improvement organizations, accrediting agencies, legislators, regulators, and government and consumer organizations to identify and implement quality measurement systems that will identify and implement quality measurement systems that will provide meaningful data for both consumers and hospitals. APIC's collaborations with other agencies are reviewed throughout this document.

4. Council of State and Territorial Epidemiologists (CSTE) and Infectious Disease Society of America (IDSA)

As previously mentioned, IDSA and CSTE joined other healthcare-oriented agencies such as SHEA to endorse CDC's Healthcare Infection Control Practices Advisory Committee (HICPAC) document entitled "Guidance on Public Reporting of Healthcare-Associated Infections." Additionally, these two agencies united with APIC, CDC, and SHEA to create a tool kit for public reporting of healthcare-associated infections that incorporates principles outlined in the aforementioned document. The resulting collaboration," Essentials of Public Reporting of Healthcare-Associated Infections: A Tool Kit," offers guidance on definitions, case-finding methodologies and risk adjustment strategies so that states may have a uniform approach for public reporting requirements.

5. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

Agencies at both the state and federal levels (e.g. Medicare and Medicaid) regulate healthcare organizations. In addition, approximately 80 percent of hospitals, which represent about 95 percent of hospital beds in the United States, are accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). An organization must comply with infection regulations set forth by each government agency and JCAHO in order to be licensed and/or accredited. In New Mexico, 73.7% of hospitals responding to the HJM 67 Task Force Infection Control Capacity Survey were accredited by JCAHO.

In November 2003, JCAHO assembled an infection control expert panel to approve revised standards aimed at preventing the occurrence of more than 2 million infections annually in the United States. The goal of the standards is to raise awareness that HAIs are a national concern that can be acquired within any healthcare, treatment or service setting, and transferred

between settings, or brought in from the community. The goals, updated once a year, focus on a variety of safety challenges that hospitals face on a daily basis and range from very simple to very complex.

Since its introduction in 2004, National Patient Safety Goal #7 to "Reduce the risk of healthcare-associated infections" has largely remained unchanged. This goal mandates that organizations must comply with current CDC hand hygiene guidelines. The rationale is that compliance with CDC hand hygiene guidelines will reduce the transmission of infectious agents by staff to patients, thereby decreasing the incidence of HAIs.

Additionally, organizations must manage as sentinel events all identified cases of unanticipated death or major permanent loss of function associated with HAIs. It is reasoned that a significant percentage of patients who unexpectedly die or suffer major permanent loss of function have HAIs. These unanticipated deaths and injuries meet the definition of a sentinel event and, therefore, are required to undergo a root cause analysis. The root cause analysis should attempt to answer the questions: 1) why did the patient acquire an infection; 2) given the fact of the infection, why did the patient die or suffer permanent loss of function?

The revised infection controls standards were introduced as part of the scored survey in January 2005. They focus on the development and implementation of plans to prevent and control infections, with organizations expected to:

- Incorporate an infection control program as a major component of safety and performance improvement programs
- Perform an ongoing assessment to identify its risks for the acquisition and transmission of infectious agents
- Use an epidemiological approach which includes conducting surveillance, collecting data, and interpreting the data
- Implement infection prevention and control processes
- Educate and collaborate with leaders across the organization to effectively participate in the design and implementation of the infection control program
- Integrate efforts with healthcare and community leaders to effectively participate in a communitywide effort
- Remain a viable community resource and plan for responding to infections that potentially overwhelm its resources

6. Consumers

HAIs represent a significant burden for both patients and the healthcare system. Consumers are interested in how HAIs presently--or potentially--affect them and/or those close to them. Members of the general public have joined forces at state and national levels to form consumer advocacy groups that campaign for the public reporting of HAIs and for the implementation of prevention and control measures in healthcare facilities. For example, Consumers Union http://www.consumersunion.org/campaigns/stophospitalinfections/learn.html is a national, independent, nonprofit organization that states its mission is to "work for a fair, just, and safe marketplace for all consumers." Additionally, Putting Patients First® http://www.nationalhealthcouncil.org/initiatives/putting_patients.htm is a public education program initiated by the National Health Council designed to empower consumers and patients to become more actively involved in taking responsibility and knowing their rights with their health care plans, providers, and employers so that they receive the most appropriate, high quality and cost effective health care possible.

However, there is concern that publicly reported hospital-based information about HAIs must be useful for consumers: concepts such as confidence intervals and risk adjustment used to interpret HAI data may be confusing. Consideration will need to be given as to: a) what consumers perceive to be important information related to HAIs; b) which venues are the best for publishing reports; and c) what are the best ways of delivering the information.

Consumer perspective on HJM 67 Task Force included the following:

1) Educational programs should be made available to healthcare workers and other hospital personnel who provide direct patient services (e.g., janitorial staff) in healthcare facilities throughout New Mexico.
2) Implementation of "total and effective" infection control—including hand hygiene—for hospital staff, patients, families and other visitors is critical.
3) Involvement of consumers in policy development around HAI issues is important particularly as it relates to identification of the issues, education and prevention efforts.
4) Consumers should also be included on healthcare facilities' boards and/or advisory committees.

III. HJM 67 Task Force Conclusions

The task force recommends that an Advisory Committee should be formulated to provide an assurance role that HAI surveillance is implemented in an evidence-based, standardized manner with appropriate analytic methods employed. The Advisory Committee should be appointed by the NMDOH Secretary and consist—at a minimum--of the current composition of HJM 67 Task Force plus other stakeholders as determined by the Secretary. Resources could be considered for the NMDOH, to assist in the facilitation of this advisory committee. The Advisory Committee should continue to study the issues surrounding HAI surveillance at the national and state levels, design the pilot year, monitor progress of the pilot and provide recommendations for ongoing surveillance, development of public reporting, and also be available to the New Mexico Legislature for consultation on issues as they relate to policy development, including potential legislation.

The Advisory Committee should take a proactive approach to collaboratively address the broad issues, including assessing consumer needs and working toward solutions at the hospital level to decrease HAI adverse outcomes, rather than simply facilitating gathering and reporting of data. Recommendations from the Advisory Committee should be consumer friendly and evidence-based. Any legislation proposed in New Mexico should be informed by the work of this Advisory Committee. Premature legislation might not serve the public need well. The current processes around HAI surveillance are dynamic and the next two to three years are expected to present new national guidelines and requirements: New Mexico needs to follow the progress of this work. Any public reporting of HAI surveillance data in New Mexico needs to include an aggressive and appropriate consumer education component. Consideration of the burden on hospitals, particularly on ICPs who are already burdened with multiple tasks concerning infection control and more in hospitals, must be taken into consideration in the design of HAI surveillance systems.

The task force is concerned that inaccurate comparisons of HAI rates between hospitals could occur if surveillance methods are not carefully designed and implemented. Differences in rates might not reflect actual differences in quality of care at the hospital level. Numerous patient and institution-specific factors affect risk of infection. Given the diversity of the nature of hospitals in New Mexico, risk-adjustment of reported rates will be essential. Therefore, the task

force recommends that year one of HAI surveillance in New Mexico be conducted as a pilot. The New Mexico Hospital Association would encourage at least three hospitals to voluntarily participate in gathering of data in a fashion that should be treated confidentially and not publicly reported. The two measures that should be considered for this pilot area: 1) CLABSIs in adult ICUs; 2) influenza vaccination rates of HCWs. The NHSN should be considered as the information technology to pilot. Resources could be considered for the NMDOH, so technical assistance as it relates to HAI surveillance and associated information technology could be provided to all participating hospitals.

Furthermore, the task force urges that New Mexico aligns its recommendations with federal guidelines in order to minimize duplication of efforts and work burden on hospitals, particularly ICPs, as HAI surveillance systems are implemented. As HAI surveillance relates to public reporting, the goals should be to provide consumers with useful information and to lower HAI rates and associated adverse patient outcomes.

Glossary

Note: These definitions are preliminary; their adoption for use would require approval by the Advisory Committee

Central line-associated bloodstream infection (CLABSI): a primary bloodstream infection (BSI) in a patient that had a central line within the 48-hour period before the development of the BSI. If the BSI develops within the 48-hours of discharge from a location, it is associated with the discharging location.

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.

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

Feasibility: the capability of carrying out successful surveillance of healthcare-associated infections, including having sufficient standardized mechanisms that can be employed and sufficient resources, human and monetary, to fully implement, monitor and evaluate activities.

Intensive care unit (ICU): a nursing care area that provides intensive observation, diagnosis, and therapeutic procedures for adults and/or children who are critically ill. An ICU excludes nursing areas that provide step-down, intermediate care or telemetry only. Specialty care areas are also excluded. The type of ICU 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)

Nosocomial: originating or taking place in a hospital, acquired in a hospital, especially in reference to an infection: in regards to infections, those that were not present or incubating prior to the patient being admitted to the hospital, but that occurred within 72 hours after admittance to the hospital.

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, closely integrated with the timely dissemination of these data to those responsible for prevention and control.

Acronyms

APIC	Association for Practitioners in Infection Control
BSI	bloodstream infection
CLABSI	central line-associated bloodstream infection
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare and Medicaid Services
CSTE	Council of State and Territorial Epidemiologists
DHHS	Department of Health and Human Services
DHQP	Division of Healthcare Quality Promotion (CDC)
DRG	diagnostic related group
DSN	Dialysis Surveillance Network
ESBL GNR	extended beta-lactamase producing gram negative rods
FTE	Full time Employee
HAI	healthcare-associated infection
HCW	healthcare worker
HICPAC	Hospital Infection Control Practices Advisory Committee
ICD-9	International Classification of Diseases, 9th Revision
ICP	infection control professional
ICU	intensive care unit
IDSA	Infectious Disease Society of America
IHI	Institute for Healthcare Improvement
IOM	Institute of Medicine
IT	information technology
JCAHO	Joint Commission on Accreditation of Healthcare Organizations
MDRO	multi-drug resistant organism
MHIRS	Missouri Healthcare-Associated Infection Reporting System
MRSA	methicillin-resistant *Staphylococcus aureus*
MSSA	methicillin-susceptible *Staphylococcus aureus*
NaSH	National Surveillance of Healthcare Workers
NCPDCID	National Center for Preparedness, Detection and Control of Infectious Diseases
NHSN	National Healthcare Safety Network
NIM	nosocomial infection markers
NMHA	New Mexico Hospital Association
NMMRA	New Mexico Medical Review Association
NNIS	National Nosocomial Infections Surveillance System
OSHA	Occupational Safety and Health Administration
PHC4	Pennsylvania Health Care Cost Containment Council
SCIP	surgical care improvement project
SHEA	Society for Healthcare Epidemiology of America
SSI	surgical site infection
UTI	urinary tract infection
VAP	ventilator-associated pneumonia
VRE	vancomycin-resistant *enterococcus*

References

1. Pittet, D., Tarara, D., & Wenzel, R.P. (1994). Nosocomial bloodstream infection in critically ill patients. Excess length of stay, extra costs, and attributable mortality. *Journal of the American Medical Association, 271(20),* 1598-1601.
2. Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention. National Nosocomial Infection Surveillance (NNIS) System Report, data summary from July 1992 to June 2004, issued October 2004. Am J Infect Control 2004; 32: 470-85. Accessed on September 24, 2007 at http://www.cdc.gov/ncidod/dhqp/pdf/nnis/2004NNISreport.pdf.
3. Culver DH, Horan TC, Gaynes RP et al. Surgical wound infection rates by wound class, operative procedure and patient risk index. Am J Med 1991; 91 (suppl 3b): 152S-157S.
4. Centers for Disease Control and Prevention, Division of Healthcare Quality Promotion, National Healthcare Safety Net website. Accessed on September 23, 2007 at http://www.cdc.gov/ncidod/dhqp/nhsn.html.
5. Harris AD, Lautenbach E, Perencevich E. A systematic review of quasi-experimental study designs in the fields of infection control and antibiotic resistance. Clin Infect Dis 2005;41:77-82
6. Institute of Medicine. To err is human: building a safer healthcare system. Washington, D.C.: National Academy Press; 1999.
7. The Joint Commission. 2007 Comprehensive Accreditation Manual for Hospitals: The Official Handbook (CAMH). Joint Commission Resources, Incorporated.
8. Leape L, Epstein AM, Hamel MB. A series on patient safety. N Engl J Med 2002: 347:1272-4.
9. Institute for Healthcare Improvement. 5 Million Lives Campaign website. Accessed on September 23, 2007, at http://www.ihi.org/IHI/Programs/Campaign/Campaign.htm?TabId=2.
10. Boyce JM, Pittet D. Guideline for Hand Hygiene in Health-Care Settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force Morbid Mortal Wkly Rep, October 25, 2002 / 51(RR16);1-44. Accessed on September 23, 2007, at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5116a1.htm
11. Mangram AC, Horan TC, Pearson TL, Silver LC, Jarvic WR; the Hospital Infection Control Practices Advisory Committee. Guideline for prevention of surgical site infection, 1999. Infect Control Hosp Epidemiol 1999; 20(4): 247-78. Accessed on September 23, 2007 at http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/SSI.pdf.
12. Centers for Disease Control and Prevention. Guidelines for the prevention of intravascular catheter-related infections. Morb Mortal Wkly Rep 2002;51(RR-10). Accessed September 23, 2007 at http://www.cdc.gov/mmwr/PDF/rr/rr5110.pdf.
13. Tablan OC, Anderson LJ, Besser R, Bridges C. Guidelines for Preventing Health-Care--Associated Pneumonia, 2003 Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee Morbid Mortal Wkly Rep, March 26, 2004: 53(RR03);1-36 . Accessed on September 23, 2007 at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5303a1.htm.
14. Siegel JD, Rhinehart E, Jackson M , Chiarello L; the Hospital Infection Control Practices Advisory Committee. Management of multidrug-resistant organisms in healthcare settings, 2006. Accessed on September 23, 2007 at http://www.cdc.gov/ncidod/dhqp/pdf/ar/mdroGuideline2006.pdf

15. Dellinger EP,. Hausmann SM, Bratzler DW, Johnson RM , Daniel DM, Bunt KM, et al. Hospitals collaborate to decrease surgical site infections
Am J Surg 2005; 190 (1): 9-15.

16. Pronovost P, Needham D, Berenholtz S, et al. An intervention to decrease catheter-related bloodstream infections in the ICU. N Engl J Med 2006;355(26):2725-32.
17. Ostrowsky B, Trick W, Sohn A, et al. Control of vancomycin-resistant enterococcus in healthcare facilities in a region. N Engl J Med 2001;344(19):1427-33.
18. Pennsylvania Council on Healthcare Cost Containment. Hospital-acquired infections in Pennsylvania 2005. Accessed on September 23, 2007, at http://www.phc4.org/reports/hai/05/default.htm
19. Hospital and Healthsystem Association of Pennsylvania website. Advocacy and Services; News Releases. Accessed on September 24, 2007, at http://www.haponline.org/communications/news/releases/index.asp
20. Levy M. Pa. hospital infection bill approved, sent to Rendell. Philadephia Enquirer. July 14, 2007.
21. Essentials of public reporting of healthcare-associated infections: a toolkit. Prepared by the Healthcare-associated Infection Working Group of the Joint Public Policy Committee. Accessed on September 23, 2007, at http://www.cdc.gov/ncidod/dhqp/pdf/ar/06_107498_Essentials_Tool_Kit.pdf.
22. Guidance on Public Reporting of Healthcare-Associated Infections: Recommendations of the Healthcare Infection Control Practices Advisory Committee. Accessed on September 23, 2007, at http://www.cdc.gov/ncidod/hip/PublicReportingGuide.pdf
23. National Quality Forum. Draft Report**:** National Voluntary Consensus Standards for the Reporting of Healthcare-Associated Infections Data. Accessed on September 23, 2007, at http://www.qualityforum.org/pdf/projects/hai/txfullreport-HAI.pdf
24. Peng MM, Kurtz S, Johannes RS. Adverse outcomes from hospital-acquired infection in Pennsylvania cannot be attributed to increased risk on admission. Am J Med Qual 2006; Suppl 21 (6): 17S-28S.
25. Nash DB. Hospital-acquired infections: raising the anchoring heuristic. Am J Med Qual 2006; Suppl 21(6): 5S-6S.
26. Koll B. Greater New York Hospital Association and United Hospital Fund Central Line Associated Bloodstream Infections Collaborative. Accessed on September 23, 2007, at http://www.health.state.ny.us/professionals/patients/patient_safety/conference/2007/docs/improving_quality_of_care_to_reduce_hospital_acquired_infections.pdf
27. Department of Veterans' Affairs. Directive 2007-002. Methicillin-resistant *Staphylococcus aureus* (MRSA) initiative. Accessed on September 24, 2007 at http://www1.va.gov/vhapublications/ViewPublication.asp?pub_ID=1525
28. Institute for Healthcare Improvement. 5 Million Lives Campaign: reduce MRSA infection. Accessed April 1, 2007, at http://www.ihi.org/IHI/Programs/Campaign/Campaign.htm?TabId=1.
29. Association of Professionals in Infection Control and Epidemiology website. Government Advocacy. Summary of state legislation, including on MRSA . Accessed on September 23, 2007 at http://www.apic.org/scriptcontent/custom/dyncontent/legislation/index.cfm?section=governmentadvocacy.
30. Department of Health and Human Services. Centers for Medicare and Medicaid Services. 42 CFR Parts 411, 412, 413, and 489. Medicare Program. Changes to the Hospital Inpatient Prospective Payment System and Fiscal Year 2008 Rates. Accessed on September 23, 2007, at www.cms.hhs.gov/AcuteInpatientPPS/downloads/CMS-1533-FC.pdf
31. Edwards JR, Peterson KD, Andrus MK, Tolson JS, Goulding JS, Duduck MA, et al. National Healthcare Safety Network (NHSN) data summary for 2006, issued June 2007. Am J Infect Control 2007; 35: 290-301.

32**.** *Legislative mandates for use of active surveillance cultures to screen for methicillin-resistant* Staphylococcus aureus *and vancomycin-resistant enterococci: position statement from the Joint SHEA and APIC task force,* American Journal of Infection Control, March 2007, Volume 35, Number 2.

Members of the New Mexico House Joint Memorial 67 Task Force

Co-Facilitator:
Joan Baumbach, MD, MPH, MS
Infectious Disease Epidemiology Bureau Chief
New Mexico Department of Health (NMDOH)

Co-Facilitator:
Christina Ewers, RN
Nurse Epidemiologist
NMDOH

Carlene Brown MPH CPHQ
Quality Improvement Manager
New Mexico Medical Review Association (NMMRA)

Jeff Dye, MBA, FACHE
President and CEO
New Mexico Hospital Association

Mary T. Jaco, RN, MSN, CIC
Infection Control Practitioner
Presbyterian Healthcare Services
Central New Mexico

Kristine “Kooch” Jacobus, MA
Deputy Director
NM Health Policy Commission

Susan M. Kellie, MD, MPH
Associate Professor of Medicine
Division of Infectious Diseases
University of New Mexico School of Medicine
Hospital Epidemiologist, University of New Mexico Health Sciences Center, and
New Mexico Veterans' Administration Healthcare System

Nancy Mikkelsen, BSN, MA, CIC
President of APIC New Mexico
Infection Control Practitioner
Kindred, Albuquerque

Mark Mueller, MPH
Infectious Disease Epidemiologist
NMDOH

Sandra O'Kelly BSN
Infection Control/Safety Coordinator
Holy Cross Hospital
Ophelia Rinaldi, LISW
Consumer Representative

David Rodriguez
Deputy Director
Division of Health Improvement
NMDOH

C. Mack Sewell, DrPH, MS
State Epidemiologist
NMDOH

Chad Smelser, MD
Medical Epidemiologist
NMDOH

Liz Stefanics, PhD
Director
NM Health Policy Commission

David W. Stryker, MD
Infectious Disease Practitioner/Epidemiologist
Presbyterian Healthcare Services
Central New Mexico

Anne Timmins MPH BChD
Quality Improvement Coordinator
New Mexico Medical Review Association (NMMRA)